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THE DEVELOPMENT OF LOGIC IN THE DOMINICAN SCHOOL

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ABSTRACT

The subject of this dissertation is a comprehensive treatise of logic entitled *Summa totius logicae Aristotelis*, of unknown authorship and unknown date. Early in its manuscript history this *Summa* was falsely attributed to Saint Thomas Aquinas. Under this attribution, which persisted down to this century, it became a crucial factor in the development of logic among Dominican thinkers and thomistic philosophy. I have reviewed the history of this *Summa*, and through clues which I found in its literature I was able to find and examine four manuscripts of the work. I concur with the opinion of those who reject the authorship of Aquinas, but I have found that many of their conjectures about its actual author are based on the vulgate text and have no justification in the manuscripts. I have analyzed its theory of the categorical syllogism and found that its rules are incomplete. I have analyzed its sentential logic and found that its many non-formal considerations have some effect on its interpretation of validity and a greater effect on its utility. On the basis of all my research I have concluded that an Italian Dominican wrote this *Summa* between 1325 and 1375.

PREFACE

At the outset of my research, I little understood the problems which beset a student who undertakes the study of an important book which has been neglected by scholars and historians. Under the scholarly and patient guidance of Professor Rulon Wells of Yale University, I have been able to resolve many of the unexpected difficulties which I encountered and to trace the history of one such book, the *Summa totius logicae Aristotelis*. I have tried to follow the suggestions and criticisms of Professor Wells as best I could, and whatever deficiencies there are in this dissertation are mine alone. I wish to express my sincere appreciation to Professor Wells and to my other teachers in the Department of Philosophy of Yale University.

I should also like to thank my instructors in the General Program of Liberal Education at the University of Notre Dame, and especially Professors R. Catesby Taliaferro and Otto Bird who first introduced me to the history of logic.

To my parents and my wife I owe a debt of gratitude for their encouraging moral support which made this dissertation possible.

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VOLUME II

PREFACE iii

APPENDIX: A TRANSLATION OF THE SUMMA TOTIUS LOGICAE ARISTOTELIS 1*

INTRODUCTION

The aim of this dissertation is to cast some light upon the development of logic among Dominican thinkers from Saint Thomas Aquinas (1224-1274) to John Poinsot [John of Saint Thomas] (1589-1644). The crucial factor in this development is a comprehensive treatise of logic entitled *Summa totius logicae Aristotelis, seu de praedicabilis, de praedicamentis, de enuntiatione, de syllogismis et de demonstratione*, which is of unknown authorship and unknown date. Early in its manuscript history this *Summa* was attributed to Thomas Aquinas, and after the invention of printing it was published among his *opuscula*. Under this attribution, which persisted down to this century before being conclusively disproved, the *Summa* exercised a great influence on traditional logicians and especially on those of the thomistic school. Even though the *Summa* continues to be published today in the various editions of the *opuscula* and *opera omnia* of Aquinas, its present influence is indirect and almost unnoticed. While scholars have devoted much effort to proving that Thomas Aquinas did not write this *Summa*, they have provided little pertinent information for determining its actual author and its date and place of composition. Nor have they made any comprehensive studies of the *Summa* or of its historical significance.

Two independent movements of the past century have contributed to a revival of interest in the logical works of the mediaeval scholastics. On the one hand, the advances in logic following the introduction of symbolic techniques have enabled logicians to overcome the barriers within which logic had been confined by tradition and pedantry for many centuries. The resulting achievements have led the more philosophically inclined logicians to attempt to define their positions and locate them within an historical and philosophical tradition. Thus they have given a new and forceful impetus to the historians of logic who, in turn, have found a very fertile field in the late mediaeval period, during which the Summa totius logicae Aristotelis was probably written.

On the other hand, an encyclical letter of Pope Leo XIII which urged Catholic philosophers to "restore the golden wisdom of St. Thomas"[1] posed no small problem for the thomistic logicians because Aquinas did not write a formal logic. While it is true that he did write commentaries on some of Aristotle's logical works and that his books are interspersed with numerous remarks of logical import, nevertheless these do not constitute anything approaching a complete logic. In turning to the commentators of Aquinas, the thomistic school found only one logic which claimed to be inspired by the teachings of St. Thomas, the Ars logica of

John Poinsot.[2] Since this logic seemed to have all the credentials needed for the purposes outlined by Pope Leo, it became the basic source of logic for the contemporary thomistic school, even to the extent of supplanting the logical doctrines of Aquinas himself.

With the thomistic revival well under way, reactions began to set in. Philosophers disillusioned with the extreme formalism and the emphasis on extensionality in modern logic turned to John Poinsot for an intentional logic, while those concerned with exploring the wisdom of St. Thomas began to doubt whether John Poinsot did actually represent "the top Scholastic development of Aristotelian Logic".[3] The doubts were strengthened when scholars realized that the apocryphal Summa totius logicae Aristotelis was a prime source of John Poinsot's thomistic inspiration in logic and that, in the cautious opinion of L. Lachance, it has exercised a "not always happy" influence on thomistic logicians and in particular on John Poinsot.[4] But J. Maritain allayed the doubts when he wrote of the Summa and of the De natura syllogismorum, "although apocryphal their doctrine is excellent."[5] Many remained unconvinced and M.-D. Chenu expressed their opinion by saying,

> La Summa totius logicae, non seulement apocryphe, mais pénétrée de conceptualisme nominaliste, a fâcheusement alimenté la logique de Jean de Saint-Thomas, et celle de beaucoup d'autres thomistes à la suite.[6]

We not only lack historical studies on John Poinsot, as F. Wade admits,[7] but we also lack comprehensive studies on the logic of St. Thomas, on the history of logic in the tradition from St. Thomas to John Poinsot, and especially on the sources of John Poinsot's logic and how his use of these sources affected his interpretation of St. Thomas. The historical and doctrinal problems involved in these questions are immense and beyond the scope of any dissertation. However, they need to be answered if we are to have an adequate history of logic.

In this dissertation I shall present first all the information which I have been able to find on the history of the text of the *Summa totius logicae Aristotelis* and then a review of the critical appraisals of this material by other scholars. After presenting my own research on the questions raised by them, in later parts of the dissertation I shall evaluate this scholarship and offer my opinions on the probable authorship and date of composition of the *Summa*.

As far as I can determine, none of the scholars who have written about the *Summa* has ever studied a manuscript of it. In fact, when I began my research it was doubtful if any manuscripts of the work other than the author's autograph ever had existed, or if any manuscripts still existed today. By tracing clues which I found in the literature I was able to find at least four manuscripts of the *Summa*. I have described these and indicated their relevance to the historical issues mentioned in the earlier chapters of the dissertation.

In another chapter I have indicated some of the main points in which the Summa depends on the work of Aquinas. This task is by no means completed there, but I think that the chapter is an advance over what has been previously done.

As the sub-title indicates, the Summa totius logicae Aristotelis contains five treatises. Sister Mary Corrigan wrote a dissertation on the relation of the Summa to the corresponding books of Aristotle.[8] She also translated the Summa and located all its vague references to the works of Aristotle. In view of the further research which has been done in the history of logic and on the Summa, I have retranslated the Summa and I have incorporated the references of Sister Mary Corrigan into my notes to the translation, which is an appendix to this dissertation. I have located all the internal references in the Summa and I have written some notes on textual problems, which are parts of this dissertation. L. Reis wrote a dissertation on the predicables and predicaments in the Summa.[9] G. Grisez wrote a dissertation in which he compared the philosophies of logic of Saint Thomas Aquinas, William of Ockham and the Summa.[10] He did not include any material from the treatment of formal logic in the third and fourth treatises.

Since it appears that no scholar has studied the formal logic of the Summa, I have written an analysis and evaluation of the categorical syllogism and the sentential logic of the Summa as found in its third and fourth treatises, and I have compared the formal systems of the author of the Summa with those developed by Petrus Hispanus in his Summulae logicales.[11]

NOTES

[1] Pope Leo XIII, "Epistola Encyclica de Colenda S. Thomae Philósophia," Acta Leonis Papae XIII, Vol. I (Bruges, 1887), p. 107.

[2] John Poinsot [Ioannes a Sancto Thoma, O. P.], Ars logica (Arcala, Spain, 1631-1632). For a discussion of the thomistic inspiration of John Poinsot, see the "Translator's Introduction" mentioned in the following note.

[3] F. C. Wade, S. J., "Translator's Introduction," Outlines of Formal Logic of John of St. Thomas (Milwaukee, 1955), p. 1.

[4] L. Lachance, O. P., "St-Thomas dans l'histoire de la logique," Etudes d'histoire littéraire et doctrinale du XIIIe siècle, Première série (Paris, 1932), p. 62, n. 1.

[5] Jacques Maritain, Formal Logic (New York, 1937), p. 205, n. 1.

[6] M.-D. Chenu, O. P., Introduction a l'étude de Saint Thomas d'Aquin (Paris, 1950), p. 280.

[7] Wade, p. 4.

[8] Mary Corrigan, R. S. C. J., "Summa totius logicae Aristotelis: a Translation and a Study of the Aristotelian Sources" (unpublished Ph.D. dissertation, Department of Philosophy, Fordham University, 1934).

[9] Lincoln Reis, "The Pseudo-Thomas on the Predicables and the Predicaments" (unpublished Ph.D. dissertation, Department of Philosophy, Columbia University, 1935).

[10] Germain G. Grisez, "Basic Oppositions in Logical Theory" (unpublished Ph.D. dissertation, Department of Philosophy, University of Chicago, 1959).

[11] Petrus Hispanus, Summulae logicales, ed. I. M. Bocheński (Turin, 1947).

CHAPTER I

A HISTORY OF THE TEXT OF THE SUMMA TOTIUS LOGICAE ARISTOTELIS

The circumstances surrounding the attribution of the Summa totius logicae Aristotelis to Saint Thomas Aquinas and its inclusion among his opuscula remain a mystery for future scholarship to resolve. But the consequences of these events have determined the context in which the known history of the Summa occurs. As the studies of Mandonnet[1] and Grabmann[2] reveal, the number of opuscula attributed to Aquinas in catalogues and codicies in the period immediately following his death in 1274 was about twenty-five, but by 1498 this number had increased to seventy-three. It was at some point in this period that the Summa, along with many other apocryphal works, made its intrusion into the thomistic corpus. While doubts arose among scholars of the time about the authenticity of many works ascribed to Aquinas, no serious consideration was given to them until the time of the preparation of the Opera omnia which was published at Rome in 1571-72 under the direction of Pope Pius V.[3] Since most of the apocryphal works entered the corpus as opuscula, thomistic scholars have devoted most of their work on the authenticity question to the opuscula. But the prime interest of these scholars was the establishment of Aquinas' authorship of the genuine works. Consequently, when they recognized a particular opusculum as apocryphal, they simply noted the fact and sometimes a reason for it, and then passed on to another case. The Summa suffered this fate to a greater extent than most of the other apocrypha, hence the task of retracing its history is especially difficult. In this chapter and in the following one I have attempted to disentangle the fragmentary history of the Summa totius logicae Aristotelis from the volumes of literature available on the development of the thomistic corpus. Later in this dissertation I shall add the pertinent information which I have uncovered in my own research.

The first explicit reference to the Summa totius logicae Aristotelis is still a matter of conjecture. The earliest mention of it by title which I have found in the literature of the subject is that which occurs in a catalogue of the works of Saint Thomas Aquinas which Petrus de Bergamo compiled and placed at the beginning of his Tabula super omnia opera divini doctoris Thomae Aquinatis, which was printed at Bologna in 1473.[4] The second part of this catalogue begins with the statement,

> Iste est numerus et ordo opusculorum sancti doctoris secundum quod allegantur in hac tabula numero LII.

Then follow the numbered titles of fifty-two opuscula.

Each title is followed by the incipit of the work, with one exception. Number 48 reads,

Summa tocius logice * sic * _______________ .

Petrus de Bergamo does not state an incipit for the Summa, and he thereby raises several questions. Why did he list this title among the opuscula of Aquinas? Why did he not state the incipit of the work? Did he intend to indicate by this title the work which later appeared under the title Summa totius logicae Aristotelis?

It seems reasonable to assume that if Petrus de Bergamo had any direct knowledge of the work whose title he lists as Summa tocius logice, he would have been able to supply its incipit. He could not have seen a printed edition of the Summa totius logicae Aristotelis because it was not printed until 1491.[5] And the absence of an incipit also seems to indicate that he had not seen any manuscript of the work and, consequently, that he was not familiar with it at all. There remains the possibility that he found the title with an attribution to Aquinas in some catalogue. Mandonnet describes in detail fifteen catalogues of the works of Aquinas, fourteen of them prior to 1473, and presents the texts of many of them.[6] None of these catalogues, ranging in date from about 1279 to 1529, mentions the title Summa totius logicae Aristotelis or any variation of it, or the sub-title of the work. Michelitsch presents the texts of twenty-one catalogues which list works of Aquinas (fourteen of them being catalogues discussed by Mandonnet), and none of these catalogues, ranging in date from 1274 to 1455, mentions the title or sub-title of the Summa or any variation of them.[7] After reviewing the work of Mandonnet and Michelitsch, Grabmann presents the texts of three more early catalogues and once again none of them contains any reference to the Summa.[8] Most of these catalogues were intended to be complete lists of the works of Aquinas, although they vary in works cited, both authentic and apocryphal. Furthermore, there is no evidence to indicate that any catalogue of importance to the authenticity and completeness of the thomistic corpus composed prior to 1473 has been overlooked by Mandonnet, Michelitsch and Grabmann. Hence one can conclude with a high probability that Petrus de Bergamo did not find the title Summa tocius logice in any prior catalogue of the works of Aquinas. In fact, Kruitwagen asserts that Petrus de Bergamo composed his entire catalogue without referring to any prior catalogue, listing only those works which he found ascribed to Aquinas in manuscripts.[9] I find this statement hard to believe for several reasons. First, it seems unlikely that a scholar with the thorough knowledge of Aquinas' works which Petrus de Bergamo must have had to compose the Tabula was totally unfamiliar with all twenty-four of the earlier catalogues which still exist today. Second, if Petrus listed only the titles of works which he found attributed to Aquinas in manuscripts, why did he not give the incipit of the Summa tocius logice? Thus there remains only the obvious though vague conjecture that he took the ascription on trust from some source (written or oral) unknown to us.

Before leaving the catalogue question I should like to point out that Mandonnet, Michelitsch and Grabmann[10] refer to the following passage in the catalogue of the works of Aquinas of Ptolomaeus de Luca (cir. 1312-1317), Book xxiii,

> Caput xv. De quibusdam logicalibus, quae ad instantiam quorumdam nobilium scripsit; de questionibus de quolibet et de postillis, quas super Bibliam notavit; et de quodam scripto super primam Sententiarum.
> Item, tradidit quibusdam nobilibus Aristotelis logicalia, quia scripsit Modales, Fallacias, et Introductoria ad Logicam multum clara. Fecit Commentum in libros Posteriorum, et Super librum Perihermenias........

They all wonder if this could be a reference to the Summa totius logicae Aristotelis. I shall present their opinions on this question in the next chapter. Suffice it to say here that Ptolomaeus does not give an incipit for these "Introductoria," nor does he provide any incidental information about the works, as he does for most of the other works in his catalogue. Also, the title "Introductoria" is most inappropriate for a work of the scope of the Summa. And, lastly, six of the catalogues mentioned before were composed between 1310 and 1323, some of them by friends of Ptolomaeus, and at least two of them are dependent on that of Ptolomaeus.[11] Yet he is the only cataloguer to mention the title Introductoria ad logicam. None of the other twenty-four catalogues list this title or any variation of it. Hence, pending the discovery of further information, it would seem that Petrus de Bergamo is the first person to refer to the *Summa*.

The next reference which I found to the *Summa* occurs in the *Supplementum chronicarum* of Jacobus Philippus Bergomensis (Jacopo Filippo Foresti da Bergamo), which was first printed and published at Venice in 1483.[12] According to Kruitwagen, Jacobus Philippus carelessly transcribed the catalogue of the works of Aquinas from the *Tabula* of Petrus de Bergamo into his chronicle. Among the works of Aquinas he lists *Summa logyce* with the *incipit* "quoniam." Actually, "quoniam" is the first word of the *incipit* of the preceding *opusculum* and its position after the title *Summa logyce* is probably a printer's error.[13] Hence, it would appear that this reference to the *Summa* and an *incipit* has no historical significance.

After Jacobus Philippus, the next mention of the title *Summa totius logice* occurs in the *Summa opusculorum Sancti Thomae*, edited and published by an anonymous Dominican friar and printed about 1485.[14] The origins of this book are obscure because the editor, who described himself as an "inutilis didascalus," apparently did not think it important to provide the reader with any details about himself, the city in which he lived and worked, the sources of the texts he gathered, and the printer who executed the volume. But this humble friar did acknowledge the dependence of his work upon that of Petrus de Bergamo. He writes,

> Verum quia ex tabula quam super omnibus doctoris angelici thome operibus compilauit religiosissimus ac venerabilis magister petrus de bargomo ordinis predicatorum conuentus bononiensis colligendi hec opuscula sumpsi originem et noticiam quia inicia opusculorum ponit atque in sua tabula remittit ad opuscula Igitur eius modum obseruans lij. opuscula eo ordine quo ipse in sua de qua mentionem feci allegauit tabula in hac summa sunt posita.[15]

Using the catalogue of Petrus as a base, he sought out all the opuscula then attributed to Aquinas. He succeeded in adding eighteen titles to the list of fifty-two of Petrus, and he found the texts of virtually all of these seventy opuscula

> non sine ingenti labore et fatigatione multis retroactis annis in diuersis mundi climatibus . . . ex diuersis liberarijs.[16]

Of the eighteen titles which he added, four were previously listed among the opera maiora by Petrus de Bergamo. He accepted all the titles listed by Petrus as genuine, although at least ten of them are rejected today and some others are disputed. In adding to the list of Petrus the "frater didascalus" used the catalogue of Saint Antoninus (ca. 1455) to confirm the four transferred from the opera maiora listed by Petrus de Bergamo.[17] Of the others he said,

> Alia vero sub dubio relinquo nec quod ea composuit sanctus doctor assero.[18]

Virtually none of the fourteen additional titles is found in early catalogues and virtually none of the texts are found in early codices.

Since the anonymous friar accepted the authority of Petrus de Bergamo without question, he accepted the ascription of the Summa totius logice to Aquinas. But he notes in his prologue that he was not able to find the text of the work.[19] When he reached the place in which the work belongs, following the numbering of Petrus de Bergamo, he wrote,

> Opusculum xlviij. Summa sancti thome logice. Hunc tractatum post plurimos labores nullibi potuimus inuenire sed nec eius inicium magister petrus de Bergomo inter opuscula ponit: quamuis isto ordine et numero hic [illum] interserit signum quod ad eius manus hic tractatus nondum peruenit.[20]

This reference to a Summa logice of Aquinas is particularly significant. It shows that the authority of Petrus de Bergamo was sufficient evidence for the attribution of a work with this title to Aquinas. Up to this point in history, Petrus appears to be the sole authority for such an attribution and neither a copy of the text nor even its incipit is known to the foremost thomistic scholars. Perhaps the anonymous friar had no reason to doubt the validity of the ascription, though he does doubt the authenticity of other works ascribed to Aquinas. The fact that neither Petrus nor the friar was able to find the text of the Summa would seem to indicate that the work was not in general circulation between the years 1470-1485. According to Kruitwagen, we can trust the statement of the anonymous friar about the extent of his travels and the thoroughness of his search for the texts of the opuscula.[21] If a work of this title had been in general circulation, the friar probably would have found it. If it even had been in limited circulation, this circulation probably would have included the libraries of Dominican priories, for its attribution to Aquinas and its frequent quotations from works of Aquinas are indications of Dominican authorship. And since the friar was a well-travelled Dominican, he presumably visited many of the Dominican priories on his routes and spent his evenings in them. Thus he probably had access to the libraries most likely to contain copies of the works of Aquinas. Therefore, the failure of the friar to find the text of the Summa seems to be historically significant. Yet this failure did not cause him to question either its existence or its attribution to Aquinas. Here again, there remains the obvious but vague conjecture that he received some assurance about the existence of the Summa from some source (written or oral) unknown to us.

In 1490 Antonio Pizzamano edited a volume entitled Opuscula Sancti Thome containing seventy-two titles and the texts of virtually all of these works with the exception of the text of the Summa totius logice.[22] According to Kruitwagen, this edition is taken almost entirely from the Summa opusculorum of the anonymous friar with no acknowledgment of this fact by Pizzamano, and what was not taken from the Summa opusculorum was taken from a 1488 edition of fifty-one opuscula of Aquinas edited by Paulus Soncinas, again without any acknowledgment.[23] Pelzer amends the view of Kruitwagen slightly with regard to the relative dependence on each source, but this does not affect the Summa totius logice since it is not mentioned at all in the edition of Soncinas.[24] Since its primary source is the Summa opusculorum, the Pizzamano edition of 1490 supplies no new information about the Summa totius logice, with one exception noted immediately below. Pizzamano included this paraphrase of the note which the friar appended to Opusculum xlviij:

> Opusculum 48m secundum magistrum petrum de bergamo in tabula sua est summa totius logyce. Quem tractatum multis laboribus quesitum nullibi potuimus inuenire: sed nec eius initium magister petrus de bergamo predictus inter opuscula ponit: quamuis ipsum hoc in loco in sua tabula allegauerit. Signum est autem quod etiam ad eius manus non peruenerit.[25]

The curious feature of the Pizzamano edition of 1490 is that in a dedicatory preface in which he gives his opinions concerning the authenticity of certain opuscula Pizzamano doubts the thomistic authorship of only two of the fifty-two titles listed by Petrus de Bergamo, numbers 46 and 48, and he fails to cite any reasons for these particular doubts. Opusculum 46, whose authenticity he doubts, is identical with Opusculum 32, whose authenticity he does not doubt. Furthermore, this identity was known to the anonymous friar whose edition served as the basis of Pizzamano's edition.[26] And he questioned the authenticity of Opusculum 48, the Summa totius logyce, even though at that time, 1490, he had not seen a copy of the text and did not know its incipit. He may have questioned it because it did not appear in the edition of Soncinas, or because the friar could not find it, or he also may have had a source unknown to us. Otherwise, Pizzamano was consistent with the scholarship of his time in accepting the judgment of Petrus de Bergamo as authoritative on questions of thomistic authorship.[27]

About 1491 the text of a Summa logicae appeared in print in Leipzig in an edition with this inscription, Logica beati thome aurea et proficere volentibus utilis et necessaria diligenterque correcta et emendata in florentissimo studio lipsensi.[28] The text of this work is that of the Summa totius logicae Aristotelis, and thus this is the first recorded appearance of the actual text of this now well-known work that I have found mentioned in the previous scholarship.

In 1495 Johannes Trithemius published his De scriptoribus ecclesiasticis, in which he included a catalogue of the works of Aquinas. According to Kruitwagen, it is certain that he used the 1490 edition of the opuscula published by Pizzamano in compiling his catalogue.[29] He omitted the Summa from his list, perhaps because he did not find it in the Pizzamano edition.

In 1496 Hieronymus Monopolitanus, O. P., who was a fellow student of Antonio Pizzamano at the University of Padua,[30] published a book having this title on the first folio, Logica sancti thome de aquino, and this title on the second folio, Divi Thome Aquinatis (ordinis predicatorum) totius logice Aristotelis.[31] Thus Hieronymus Monopolitanus found a copy of the Summa with its title almost complete. According to Kruitwagen, who seems to be correct on this point, the text of this edition is independent of that of the 1491 Leipzig edition.[32] Hence, by 1496 two independent printed editions of the Summa are in circulation, and the search for a common source, whether printed or in manuscript, would seem justified. The truly remarkable feature of the 1496 edition is the dedicatory letter which appears on folio 1^b and which I include here in its entirety for its historical interest.

> Hieronimus Monopolitanus Theologorum Minimus ordinis predicatorum Antonio Pizamanno Patricio Veneto et artium doctori Celeberrimo S. D. P.
>
> Non me fugit Magnifice ac eximie arcium doctor, te optime scire divina illa opuscula Beati Thome: bis iam huc usque maxima doctissimorum virorum cura caracteribus mandata fuisse: Dialectices tamen opusculo semper omisso. Quod ut ex posteriori impressione facile colligitur: ad eorum manus non dum pervenerat. Sed cum mihi summo studio circa hoc laboranti opusculum in dominium meum tandem venisset, non sine magno labore emendavi, emendatumque imprimere curavi haud ignarus non solum tirumculis logice studiosius operam dantibus, verum etiam ipsis veteranis utilitatem non parvam allaturum: Mihi tamen compertum est plerosque nec sane ineruditos de auctoris nomine ambigere. Dum alii illuminati doctoris divi Thome Aquinatis esse omnino asserunt, alii autem heruey britonis censent: nonnulli anglici Thome peribent: quod apud me magni momenti haud quamquam est. Quum opusculum illud quantum animadvertere potui omnino divinum sit nec multum refert cuius illorum potissimum fuerit, cum omnes viri liberalium arcium solertissimi et ordinis predicatorum extiterint. Sed hec sicut et alia maiora tuo non secus quam apollineo integerrimo iudicio committo opere igitur tibi dedicato superest ut prestantiam tuam rogem, ut si quid ex litteris tam grecis quum hebreis, quibus die noctuque insudas ocii nactus fueris, id totum in diiudicando opusculo impendas. Quod te facturum liquido constat, quum te peripateticis ac thomistis acerrimum semper patronum extitisse sciam. Vale.[33]

This letter reveals that Hieronymus Monopolitanus knew that the authorship of the Summa was disputed and he indicates a few of the supposed authors according to the scholarship of his time. This is indeed a great advance over the information supplied by Pizzamano and his predecessors. The letter also indicates that other scholars, about whom we apparently have no information, were familiar with the Summa. This situation is quite different from that of 1473 when only the title was known to a prominent thomistic scholar and the attribution seemed to depend solely on his authority. Hieronymus does not state his reasons for accepting the thomistic authorship, so we do not know if the authority of Petrus de Bergamo was sufficient evidence for him, or if he accepted it on the authority of the source of his edition, or if he accepted it after due consideration of the arguments against it put forth by the authorities to whom he refers and which he must have found wanting. In any case, it now seems certain that the documents which are now available to scholars are almost all from the tradition favoring thomistic authorship and this must have been the dominant tradition during the last half of the fifteenth century. Pizzamano, of course, is the exception. At this point the history of the Summa totius logicae Aristotelis divides into the history of the text itself and the history of the criticism of the work. I shall continue the history of the text in this chapter and the history of the criticism in the next chapter.

In 1497 Ambrosius de Alemania edited and published a volume entitled Tabula super omnia opera S. Thomae, which contained three works of Petrus de Bergamo and some editorial additions and corrections of Ambrosius de Alemania.[34] The title of Opusculum 48 is given as

> Summa totius logicae. sic. Quoniam omnes homines. prout etiam in supplemento chronicarum. libro 13, folio 130. allegatur.[35]

This is a reference to the first edition of the chronicle of Jacobus Philippus discussed above. The incipit given by Ambrosius de Alemania is a composite of that given by Jacobus Philippus and that of the Summa itself. One may conclude from this that Ambrosius de Alemania had some direct or indirect knowledge of the work. The edition of the Summa totius logicae Aristotelis published by Hieronymus Monopolitanus was printed in Venice in 1496, while the edition of the Tabula of Petrus de Bergamo edited by Ambrosius de Alemania was printed in Venice in 1497. In all probability Ambrosius de Alemania knew about the 1496 edition of the Summa totius logicae Aristotelis and therefore he was able to supply its incipit for his edition of the Tabula. But his inaccuracy in reporting the incipit would almost preclude his having seen the 1496 Venice edition. He may have had some indirect knowledge of the Leipzig edition of 1491, or some knowledge of a common source of the two editions. Kruitwagen seems to assume that Ambrosius de Alemania actually saw a manuscript of the Summa totius logicae Aristotelis, but he offers no evidence for the assumption, and in view of the inaccurate incipit it seems to be untenable.[36] There remains the possibility that the inaccurate *incipit* was simply a typographical error, the printer forgeting to delete the old one after the correct one had been furnished to him. At any event, Ambrosius de Alemania supplies us with no new information about the *Summa* and with no indication that he has seen a manuscript of it.

Antonio Pizzamano published a second edition of his collection of the *opuscula* of Aquinas in 1498 with the title *Opuscula sancti Thome: quibus alias impressis nuper hec addidimus, videlicet. Summam totius logice. Tractatum de usuris nusquam alias impressum*. And in this edition the title of *Opusculum 48* is *Divi Thome Aquinatis ordinis predicatorum totius logice Aristotelis summa*, and the full text follows.[37] The text of the *Summa* in this edition is that of the 1496 edition which Hieronymus Monopolitanus edited and published with the dedication to Pizzamano, but once again Pizzamano did not reveal the source of his edition, nor did he give any acknowledgment to Hieronymus Monopolitanus. In 1508 Pizzamano published a third edition of the *Opuscula* identical with the second edition.[38] The text of the *Summa totius logicae Aristotelis* which Pizzamano took from the 1496 edition of Hieronymus Monopolitanus and published in his 1498 and 1508 editions of the *Opuscula* became the vulgate text of the *Summa* because the editors of the *Editio Romana* (*Piana*, *Vaticana*) of 1571-72 of the *Opera omnia* of Aquinas used the Pizzamano edition of the *opuscula*.[39] All subsequent editions of the Summa totius logicae Aristotelis which are in circulation and use today depend on this Editio Romana. But the editors of the Editio Romana did not depend on the tradition of Petrus de Bergamo, or those who followed him, for the authorship question. They used the catalogue of Saint Antoninus and had to reject the thomistic authorship of the Summa because it did not appear in that catalogue and they stated that it is apocryphal for this reason in their edition.[40] Since the 1496 edition there have been no changes in the text except for typographical errors. It is now apparent that, whatever work Petrus de Bergamo had in mind when he placed the title Summa tocius logice in his list of the opuscula of Aquinas, later editors identified it with that work whose proper title is Summa totius logicae Aristotelis and whose incipit is "Omnes homines natura scire desiderant." Petrus de Bergamo apparently spurred the search for this work and the identification became a fact when Pizzamano accepted the edition of Monopolitanus into the second edition of the Opuscula as Opusculum 48, the number which Petrus de Bergamo gave to the title twenty-five years earlier.

Hence, there is little more to add to the history of the text until, of course, a manuscript of some other source or sources of the 1491 and 1496 editions should be discovered. So far, no explanation has been offered for the sudden appearance of the work, but I will offer some pertinent information on this question in Chapter III. Meanwhile, the later history of the _Summa_ is primarily a question of its authorship, and I shall now turn to this problem in Chapter II.

NOTES

[1] Pierre Mandonnet, O. P., Des écrits authentiques de S. Thomas d'Aquin (2d éd.; Fribourg, 1910); "Introduction," Opuscula omnia S. Thomae Aquinatis (Paris, 1927), Vol. I, pp. i-liii.

[2] Martin Grabmann, "Die Werke des Hl. Thomas von Aquin," Beiträge zur Geschichte der Philosophie und Theologie des Mittelalters, XXII, (heft 1/2, 1949).

[3] Bonaventura Kruitwagen, O. F. M., S. Thomae de Aquino summa opusculorum, anno circiter 1485 typis edita, vulgati opusculorum textus princeps (Kain, Belgium, 1924), pp. 33-34; Mandonnet, Des ecrits ... , ch. i.

[4] Kruitwagen, pp. 82-90. Kruitwagen describes the first edition in detail, and he lists other descriptions of that edition. He states that the second edition (Basal, 1478) is identical in text with the first edition. I have compared the copy of the second edition which is in the Sterling Memorial Library of Yale University with Kruitwagen's description of the first edition and found no discrepancies. The quotations from the first edition are taken from Kruitwagen, pp. 82-90.

[5] Kruitwagen, p. 49; infra, p. 18.

[6] Mandonnet, Des écrits ... .

[7] A. Michelitsch, Thomasschriften (Graz, 1913).

[8] Grabmann, "Die Werke . . . ."

[9] Kruitwagen, p. 83.

[10] Mandonnet, Des écrits ... , p. 63; Michelitsch, p. 132; Grabmann, p. 241. The quotation is from Michelitsch.

[11] Mandonnet, Des écrits ... , p. 66; "Introduction," p. xv.

[12] Foresti, Jacopo Filippo, da Bergamo, Supplementum chronicarum (Venice, Bernardinus Benalius, Dec. 15, 1486), 12ff., 31-295 (i.e., 264) numb. ff. H-C 2807; BMC xv cent. Vol. V, p. 371. This second edition is the earliest one in the Sterling Memorial Library of Yale University. The catalogue of the works of Aquinas is in Book xiii, f. 238^b.

[13] Kruitwagen, p. 86.

[14] Kruitwagen, Summa opusculorum . . . , is the history of this famous incunabulum.

[15] Quoted from Kruitwagen, p. 23.

[16] Quoted from Kruitwagen, p. 6.

[17] Kruitwagen, p. 25.

[18] Kruitwagen, p. 25.

[19] Kruitwagen, p. 23.

[20] Quoted from Kruitwagen, pp. 48-49. On the friar's acceptance of the authority of Petrus de Bergamo, see Kruitwagen, p. 36; p. 50.

[21] Kruitwagen, pp. 6-15.

[22] Sancti Thomae, Opuscula, ed. Antonio Pizzamano (Venice, Hermann Liechtenstein, Sept. 7, 1490). H-C 1541; Kruitwagen, pp. 28-32; pp. 48-49. The Sterling Memorial Library of Yale University has one copy of each of the three editions and these copies agree in all respects with the descriptions of Kruitwagen.

[23] D. Thome Aquinatis, Opuscula preclarissima, ed. Paulus Soncinas, O. P. (Mediolani, Benignus et Iohannes fratres de Honate, anno 1488). Hain 1540; Kruitwagen, p. 30.

[24] A. Pelzer, Review of S. Thomae de Aquino summa opusculorum, anno circiter 1485 typis edita . . . , by Bonaventura Kruitwagen, Bulletin Thomiste, II (1925), p. 347.

[25] Kruitwagen, p. 49.

[26] Kruitwagen, p. 32.

[27] Kruitwagen, p. 33.

[28] Beati Thome, Logica (Lipsiae, Mart. Landsberg, n.d.). Hain *1489; Kruitwagen, p. 49.

[29] Kruitwagen, p. 65.

[30] Kruitwagen, p. 28.

[31] Sancti Thome de Aquino, Logica, ed. Hieronymus Monopolitanus (Venice, Simon Bevilaqua, 20 May 1496). H-C *1490; Hain 8532; Polain (B) 3709; BMC V, p. 521.

[32] Kruitwagen, p. 49.

[33] I should like to thank Professor Edward Cranz of Connecticut College for Women for furnishing me with the text of this letter.

[34] Kruitwagen, pp. 84-88.

[35] Quoted from Kruitwagen, p. 86.

[36] Kruitwagen, p. 86.

[37] Sancti Thome, Opuscula, ed. Antonio Pizzamano (Venice, mandato et expensis Octaviani Scoti, cura et ingenio Boneti Locatelli, 22 December 1498). Hain *1542; Kruitwagen, p. 34; p. 49.

[38] Kruitwagen, p. 33; p. 49.

[39] Kruitwagen, pp. 33-34.

[40] Kruitwagen, p. 34; Mandonnet, Des écrits ... , pp. 83-86.

CHAPTER II

THE LATER HISTORY OF THE SUMMA TOTIUS LOGICAE ARISTOTELIS

I have noted in the previous chapter that several unexplained events characterize the early history of the Summa totius logicae Aristotelis. Prior to 1473 none of the many catalogues of the works of Saint Thomas Aquinas mentions the Summa, nor is there any mention of it in any thomistic literature. But by the last quarter of the fifteenth century several prominent thomistic scholars knew of the existence of the work and affirmed its ascription to Aquinas, even though they may not have seen or read it. Then, almost simultaneously with the discovery of the work, doubts arose about its authorship. In 1490 Antonio Pizzamano, for reasons which he does not reveal, doubted its thomistic authorship before he had obtained a copy of it. About the same time, or shortly thereafter, a printed edition of the Summa appeared in Leipzig under the title Logica beati Thome, but it provides no information about the editor or the circumstances of publication. In 1496 Hieronymus Monopolitanus published a dedicatory letter in his printed edition of the Summa in which, while acknowledging a contemporary dispute concerning its authorship, he reaffirmed the traditional attribution to Saint Thomas Aquinas.[1] All these events were not to pass unnoticed and I shall now turn to those which followed upon them.

Even though Antonio Pizzamano did not reveal his reasons for doubting the thomistic authorship of the Summa, there is some evidence to indicate that he may have had strong grounds for his doubts. While at the University of Padua he studied under Ludovicus Ferrariensis and his fellow students included Thomas de Vio Caietanus, O. P. [Cajetan] and Hieronymus Monopolitanus, O. P.[2] As far as I have been able to determine, neither Ferrariensis nor Cajetan, both noted commentators on Aquinas, ever refers to the Summa. This is especially significant with regard to Cajetan since he completed Aquinas' commentary on the De Interpretatione and in so doing he never refers to the corresponding treatise in the Summa.[3] It certainly seems likely that these thomistic scholars were familiar with the Tabula of Petrus de Bergamo and perhaps even with the Summa itself. Thus, in rejecting the thomistic ascription of the Summa, Pizzamano may simply have been reporting the scholarly opinion of his friends. There is no doubt that Pizzamano neglected to acknowledge his sources,[4] but he may have felt that the authorship question of the Summa was well known and hence he was under no obligation to elaborate on it.

The dedicatory letter of Hieronymus Monopolitanus tends to confirm these conjectures. From it we learn that Monopolitanus found a manuscript of the Summa, presumably about 1495 or 1496. Although he does not indicate whether or not he previously shared Pizzamano's doubts about its authorship, he clearly implies that his discovery of this manuscript, apparently one which ascribed the Summa to Aquinas, has convinced him that Aquinas wrote the work. In order to publish the Summa under the name of Aquinas, however, he must have felt obligated to explain his position to those friends whose opinion on the authorship question had been reported by Pizzamano. Ostensibly the letter dedicates his edition of the Summa to Pizzamano, who had been unable to find that text for his edition of the opuscula of Aquinas. But Monopolitanus uses the occasion to note that he is well aware of the fact that many scholars of some repute have denied the thomistic authorship of the Summa, some attributing it to Hervaeus Natalis Britonis and others to Thomas Anglicus, but that he, after studying and editing the work, concurs in the opinion of the distinguished men of the liberal arts and of the Dominican order who attribute it to Thomas Aquinas. Thus, Monopolitanus explicitly confirms the existence of a wide-spread controversy, but evidently he feels no need to relate the details with which all the parties are familiar. Furthermore, he is so certain about his position that he sees no need to defend it at length nor to refute his opponents point by point. Unfortunately, his letter is the only document which we now have relating to this controversy and it is of little help to the modern critic. And, despite the letter, Pizzamano remained unconvinced. He incorporated the text of the Summa edited by Monopolitanus into the 1498 and 1508 editions of the opuscula which he published, but he did not retract his statement doubting its authenticity.[5] Nor did Monopolitanus succeed in ending the speculation about Hervaeus Natalis and Thomas Anglicus, as we shall see in the next few pages.

With the 1490-91 Leipzig edition and the 1496, 1498 and 1508 Monopolitanus-Pizzamano editions in circulation, little more is heard about the Summa totius logicae Aristotelis until the time of the Editio Romana. The first scholar to cast a critical eye on the works of Aquinas and to discern the necessity for distinguishing the authentic writings from the apocryphal in the thomistic corpus was Johannes Ambrosius Barbavara, a professor of theology at the University of Padua from 1561 to 1572.[6] To this end he wrote a book entitled Censura opusculorum que sub D. Thomae Aquinatis nomine hactenus prodierunt, which has never been printed.[7] Some later thomistic scholars, however, have read the manuscript of this work and utilized it extensively. Since the views of Barbavara did not become generally known until others quoted him, I shall relate his contributions in their order of publication.

Pope Pius V ordered the publication of a complete edition of the works of Aquinas, and this edition, known as Editio Romana (Piana, Vaticana), was published in 1571-72. The editors took the texts of all the opuscula from the editions of Pizzamano, but on questions of authenticity they relied primarily on the catalogue of Saint Antoninus, written about 1455, which does not mention the Summa. Hence, they listed it among the spurious works, and in this case they agreed with Pizzamano. This edition, and especially the volume containing the opuscula, was often reprinted, and through it the Summa received a wide circulation.[8]

Following the Roman edition there is no further important reference to the Summa until the publication of the Ars logica of John Poinsot (John of Saint Thomas) in 1631 and 1632. Poinsot accepted the Summa as an authentic writing of Aquinas and he seems to be unaware of the history which I have just related. One indication of its importance for his logic is the fact that he cites the Summa sixty-four times in the Ars logica.[9] Poinsot was aware of some doctrinal differences between the Summa and other works of Aquinas. In discussing one of them, he wrote,

> Et haec dicimus ad salvandum expressum locum D. Thomae opus. 48. cap. 2. de Relatione [Parma, 74a] expresse ponit non esse distinctam rem relationem a fundamento. Nec debimus negare hoc opusculum esse D. Thomae, a quo toties auctoritatem eius petimus.[10]

Except for occasional remarks in the dissertation of Grisez,[11] we have no historical or critical essays showing the relations between Poinsot and his sources. Nevertheless, one cannot overestimate the historical importance of Poinsot's acceptance of the Summa as a genuine work of Aquinas, because all of the current thomistic logics are based on his Ars logica. Hence, it is through the logic of Poinsot that the Summa still exercises an influence on thomistic philosophy.

After Poinsot, the next reference to the Summa is in the famous work of Jacques Quétif and Jacques Echard, Scriptores Ordinis Praedicatorum, published at Paris in 1719-21. In discussing the opuscula of Aquinas, they write,

> 48. De totius logicae Aristotelis Summa. Pr. Omnes homines natura scire desiderant.
> Ut dubium etiam minore charactere cusum: nullus veterum inter opera S. Thomae numerat. Florentiae ad S. Marc. Arm. iv cod. 14 sec. xv. Logica eximinia doctoris S. Thome de Aquino etc. videtur idem opus, sed falso ei ascriptum. Prodiit typis seorsim Venetiis, Simon Bevilaqua, 1496.
> Barbavarius teste Alva sic censebat: Licet sit viri undequaque eruditi, habet tamen aliqua, propter quae Thomistae in controversiam merito illud revocent.[12]

They rejected the Summa because there exists no old authority who accepts it and on the testimony of Barbavara which they apparently received through a work of Petrus de Alva et Astorga. I have been unable to consult any of the works of Petrus de Alva et Astorga, but I learn from Kruitwagen that he engaged in many controversies over the authenticity of the thomistic corpus in the seventeenth century and that he has contributed nothing of importance to the history of the Summa.[13] It is also interesting to note that Quétif and Echard cite the 1496 edition of the Summa, which contains the letter of Hieronymus Monopolitanus.

In their list of the works of Hervaeus Natalis, Quetif and Echard write,

> DUBIA AUT SUPPOSITITIA
>
> 1. Opusculum xlviii inter alia S. Thomae de Aquino cui citate *Totius logicae Aristotelis Summa*. Simlerus a multis Herveo nostro asseri testatur, et excipit Labbeus in notis ad Bellarminum, penes quos fides: nam nulla hujus aliunde mihi notitia.[14]

As this quotation indicates, the tradition ascribing the *Summa* to Hervaeus Natalis is still alive.

The next scholar to write about the *Summa* is a Venetian priest, Father Johannes Franciscus Bernardus Maria de Rubeis (Di Rossi), who published his *De gestis et scriptis ac doctrina Sancti Thomae Aquinatis dissertationes criticae et apologeticae* in the *Opera omnia* of Aquinas printed at Venice between 1745 and 1760. He wrote of the *Summa*,

> Opusculum, quod inscribitur *De totius logicae Aristotelis summa*, veterum nemo recenset. Barbavarii censuram refero: "Licet sit viri undequaque eruditi, habet tamen aliqua, propter quae thomistae in controversiam merito illud revocent. Quale illud est, quod doctrina illa *Praedicabilium et praedicamentorum* (sex vel septem tractatibus comprehensa) tota metaphysicalis est et ad novitios imbuendos omnino inutilis: quare in opportuniorem locum eas considerationes Aquinas rejecisset. Item quod capite iii *Praedicabilium* ait: *Animas separatas differre numero, non per materiam quam non habent et cui non conjunguntur, nec per relationem ad materiam cui conjungibiles sunt, cum relatio sit posterior ipso relato*: cum tamen ubique doceat divus Thomas et maxime *De ente et essentia* capite iv, eas individuari per habitudinem ad corpus, quae habitudo non est relatio, sed fundamentum relationis. In eodem etiam capite ponit, principium individuationis *in formis esse potentialitatem quamdam*, ex qua habent, *ut sint partes compositi* et ut possint jungi materiae: cum tamen S. Aquinas semper referat individuationem ad materiam signatam, tamquam in radicem et originem. In principio *Praedica-*

> *mentorum* nequaquam placet illa locutio (capite i): *Nunc*, inquit, *dicendum est de Praedicamentis: et quia Praedicamentum dicit quaedam praedicabilia, ordinata in ordine praedicamentali, videndum est, quot modis fiat praedicatio*. Neque illud, quod in ii capite *Praedicamentorum* ponit conceptuum ordinem intellectus talem; ut *primo ens apprehendat*, deinde per ordinem quae sequuntur magis universalia, *substantia videlicet, deinde corpus*, etc. Hic enim ordo in cognitione confusa rerum, de qua sermonem ibi esse constat, minus servatur a divo Thoma: quod optime notat Caietanus in quaesito *de primo cognito*: praeter hoc quod ipsa experientia testatur, nos prius cognoscere quod Socrates sit homo, quam sit animal."[15]

This passage reveals the extent to which Barbavara was a textual critic. It is the first example of textual criticism of the *Summa* used to establish its apocryphal character. From this dissertation of De Rubeis we can also see the characteristic attitude of the thomistic scholars toward the *Summa*. With two exceptions, all of them who had read it rejected it as apocryphal for two reasons. First, they could find no evidence of it in the early catalogues or codices of the works of Aquinas. Second, if they had any notion of the value of textual criticism, they would point out a few passages in which it obviously differed in its teaching from well-known views of Aquinas. Having done this, they gave little or no consideration to the work itself. Of the two exceptions, the case of Hieronymus Monopolitanus is understandable. Living at a time during which the *Summa* is much discussed even though its text is not available, he apparently was the first to rediscover the text. Presumably he found what he thought to be a rather old manuscript ascribing the work to Aquinas. Then, while editing the manuscript, he could not help but realize the extent to which some parts of the work depend on well-known works of Aquinas. Hence, in his enthusiasm he probably lost sight of the features of the *Summa* which would tend to establish its apocryphal character. For the case of John Poinsot, there is no easy explanation.

Carl Prantl is the first non-thomistic scholar to write extensively on the *Summa*. When discussing the logic of Aquinas, he mentions that the *Summa* is a pseudo-thomistic work, citing the authority of the *Editio Romana* of 1571-72.[16] He places his discussion of the pseudo-thomistic logical writings in the chapter in which he treats authors of the late thirteenth and early fourteenth centuries. He regards the *Summa* as the most peculiar of all the apocryphal thomistic works. He believes that it is impossible that Aquinas could have written the book because not only does the author of the *Summa* treat the hypothetical syllogism, but he also mentions having written a book on that subject, whereas the hypothetical judgment has virtually no role in the thomistic theory of demonstration.[17] Also Prantl claims that the text justifies us in determining that the author lived in Spain and was a Spaniard.[18] Prantl recognizes many thomistic features in the *Summa*, and he claims that they are intermingled with elements of Byzantine logic.[19] He then proceeds to review the treatises of the *Summa*, pointing out its general thomistic lines as influenced and changed by terminology and notions of Albert the Great, Roger Bacon, Duns Scotus, Avicenna, Boethius, Petrus Hispanus, William of Sherwood, Theophrastus and the Byzantine tradition. Since the entire thesis of Prantl has been refuted by modern historians of logic,[20] it would be of little use to discuss it thoroughly here. Nevertheless, some of his suggestions certainly merit further investigation, especially the relation of the Summa to the tradition of Albert the Great.

With the revival of thomistic studies under the direction of Pope Leo XIII and the commencement of the Leonine edition of the works of Aquinas, one might expect an improvement in the treatment accorded to the Summa in scholarly studies. The beginnings of such an improvement are certainly evident in the studies of the Summa of the early twentieth century. In 1907 Pierre Duhem published an article in which he drew attention to the discussion of the category of place [ubi] and its relation to place [locus] in the Summa.[21] Duhem finds that the author of the Summa has subtly changed the emphasis of the teaching in Aquinas' commentary on the Physics and that his position approaches that of Petrus Aureoli, a Franciscan of the early fourteenth century, on the subject of place [locus]. Then Duhem points out that the author of the Summa gives two opinions on the nature of place [ubi] and fails to choose between them. Of this he writes,

> Entre ces deux opinions, dont la première est franchement

> nominaliste, tandis que la second semble réaliste, l'auteur demeure en une indécision qui surprend de la part du Docteur Angélique; cette indécision se comprendrait plutôt chez quelque contemporain de Jean le Chanoine, étourdi, comme l'a été ce dernier, par le bruit des discussions auxquelles le prédicament _ubi_ a donné lieu au sien de l'Ecole Scotiste.[22]

In the same passage on place [_ubi_], according to the vulgate text, the author of the _Summa_ mentions the city of Prague,[23] and of this Duhem writes,

> Non moins étonnante est, sous la plume de Thomas d'Aquin, cette allusion à la ville de Prague; on se fût attendu à lui entendre citer un lieu dont le nom lui fût plus familier. Au fur et à mesure que notre lecture se poursuit, nous percevons plus nettement le relent d'écrit apocryphe que dégage la _Summa totius logicae Aristotelis_.[24]

Continuing his exegesis a little further, he states that much of the text could have been written by Aquinas but, in fact, Aquinas did adopt a slightly different position. He then suggests that the whole passage on place would be more comprehensible if regarded as a refutation of Scotus' position written by a fourteenth century thomist who has been influenced by Gregory of Rimini, who was General of the Hermits of St. Augustine in 1357-58,[25] or at least by Antoine Andre, a Franciscan known as the _Doctor dulcifluus_ and who died about 1320.[26] Duhem then points out that the discussions of the categories in the _Summa_ have a fluid and indecisive character which certainly seems strange in a work attributed to Aquinas, and he cites as a prime example of the attitude of the author of the _Summa_ the following statement,

> Et quia . . . ista predicamenta [the last six cate-

> gories] non fecit Aristoteles; et ille qui fecit, non fuit tantae auctoritatis nec habuit aliquem expositorem alicujus auctoritatis, ideo de eis quilibet modernorum dicit sicut sibi videtur . . . . Quae autem istarum opinionum sit probabilior, legentis judicio relinquo etc.[27]

Duhem offers other considerations which lead him to conclude that neither Aquinas nor one of his contemporaries could have written the Summa. The most important concerns the doctrine of substantial forms which are susceptible of differing degrees of intensity.[28] Duhem finds that the teaching of the Summa is in full accord with that of Aquinas, with one exception. The vocabulary of the author of the Summa differs from that of Aquinas in one important respect. As a synonym of intensio formae the author of the Summa uses latitudo formae, a term which did not enter the scholastic vocabulary until the middle of the fourteenth century and became widely used in the last half of that century.[29]

After these considerations, Duhem then speculates on the date of composition of the Summa. The use of the expression latitudo formae tends, in his opinion, to place the date after 1350. He finds some confirmation for this in the mention of the city of Prague, since the University of Prague was founded by Charles IV in 1348. In this conjecture, a thomist teaching at Prague may have authored the Summa.[30]

Duhem points out, however, that the allusion to Prague should be considered cautiously. Perhaps the text could read "Braga, Bragensis," and in this case the reference would be to the city of Braga in Portugal. And some confirmation for this reading can be found in the passage in the chapter on the verb[31] in which the author of the *Summa* inserts a passage from his native language. Duhem writes of this,

> *Ei corere mio* n'est ni de l'Espagnol, ni du Portugais, mais ce peut être la corruption d'une phrase espagnole ou portugaise. Ce passage, en tout cas, suffirait à nous prouver que la *Somme de Logique* n'est pas l'oeuvre de saint Thomas d'Aquin.[32]

Thus, Duhem is the first scholar to submit the *Summa* to a serious textual analysis and to examine some of its teachings in their historical contexts. Combined with the evidence previously known about the *Summa*, his work has been instrumental in determining the pseudo-thomistic nature of the book.

Also in 1907 Ignaz Wild published an article in which he wrote of the *Summa*,

> Die Schrift gehört anerkanntermassen einer späteren Zeit an. P. Michael de Maria sagt darüber: *Certe nemo in lectione Aristotelis et S. Thomae versatus poterit negare huiusmodi opus maximum pretium secum ferre, etiamsi cuiusnam sit ignoretur, et peripateticam sapientiam constanter redolere*. Der Verfasser zeigt sich auch dadurch als Schuler des hl. Thomas, dass er die Kommentare desselben zu *Periherm*. und in *Analytica Post*. verwendete. Dies sind namlich die einzigln Teile des *Organon*, welche Thomas erklärt hat.[33]

Wild then gives parallel passages from the *Summa* and Aquinas' commentary on the *Perihermeneias* which show that the author of the *Summa* has quoted, with minor alterations, from that commentary of Aquinas. He also claims that the author of the *Summa* was familiar with the *opusculum De propositionibus modalibus* of Aquinas. He also cites some passages from the treatise "On Demonstration" in the Summa which are parallel to passages in Aquinas' commentary on the Posterior Analytics. Next Wild cites a passage from the Summa which parallels a passage from Hervaeus Natalis quoted by Prantl in his discussion of Hervaeus. Prantl, however, did not connect this passage with the Summa.[34] Commenting on this, Wild says,

> Derselbe wird von einigen als Verfasser der Summa vermutet. Gegen ihn spricht aber der viel elegantere Stil des wahrscheinlich ihm gehörigen Tractatus de formis, den P. Ehrle im Anhang zu Cosmus Alamannus, Summa Philos. veröffenltichte. Vielleicht hat der Verfasser auch Hervaeus benützt.[35]

Wild also mentions some of the passages of the Summa which Duhem discussed. He thinks that the expression in the author's native language is an Italian phrase and he cites the name "Brunellus"[36] as additional evidence pointing to Italian authorship. He thinks that the claim of the author to have written a book on the hypothetical syllogism is a strong argument against the authorship of Hervaeus Natalis.[37] Of the reference to the city of Prague, he writes,

> Er hielt sich also wahrscheinlich einmal zu Prag auf, wo die Dominikaner sich noch in 13 Jahrhundert niedergelassen hatten.[38]

He also thinks that the passage in which the author says that the Ethiopians are black and the Germans white would be found more plausibly in a book by a Southern European author, rather than in a book by Hervaeus Natalis Britonis or another Northern European author.[39]

About the same time during which Duhem and Wild were writing about the Summa, Pierre Mandonnet, O. P., began his famous work, Des écrits authentiques de Saint Thomas d'Aquin, in which he developed the thesis that one could determine the authenticity of various works ascribed to Aquinas through a study of the catalogues and, in particular, of the catalogue of Aquinas' works which was made a part of the process of canonization of 1319-1323.[40] Since the Summa does not appear in the "official catalogue" and none of the other catalogues mentions it, it must be apocryphal. He does add a few notes about the Summa,

> Cette somme de logique éditée dans les oeuvres complètes (Vives, xxviii, p. 95) me semble être identique avec l'ouvrage indiqué de Ptolémée de Lucques sous le nom d'Introductoria ad logicam (64). C'est la seule indication fournie par les catalogues. Wild nous dit (pp. 66-71) que l'auteur a eu sous les yeux pour son travail les commentaires de saint Thomas sur le Perihermenais et les Postérieurs analytiques. Wild fournit differentes considerations utiles. J'observerai cependant que le nom Brunellus employé par l'auteur pour désigner un individu quelconque ne trahit pas un Italien comme auteur. Le Clausum Brunelli est à Paris et dans le quartier des écoles (Chart. Univ. Paris., I, pp. 267, 429), et cela indiquerait une composition parisienne. Si la Summa s'identifie avec les Introductoria l'écrit ne serait pas postérieur aux premières années du quatorzième siècle. P. Duhem a bien reconnu que l'ouvrage est apocryphe ...[41]

Mandonnet adds considerable weight to the mounting evidence that the Summa is not a genuine writing of Aquinas. All his evidence, however, is of a negative character. He examined closely fifteen catalogues and numerous codices and did not find the Summa in any catalogue prior to that of Petrus de Bergamo and did not find it in any codex. At one point Mandonnet did suggest that Thomas Sutton may have authored some of the apocryphal logical thomistic works and this has led to the conjecture that Sutton may be the author of the Summa.[42] In fact, up to this point there is no evidence to indicate that any of the critics discussed so far have seen a manuscript of the Summa except Hieronymus Monopolitanus.

In 1914 Pierre Duhem wrote again about the question of intensio formae in scholastic philosophy.[43] This time he states that the term latitudo formae first occurs in the writings of Henricus Gandavus, who died in 1293. Thus the term came into usage in the theory of the intensity of forms about seventy-five years earlier than Duhem had suggested a few years earlier. The occasion for which Henricus Gandavus introduced the new term was a long controversy between Thomas Aquinas and Aegidius Romanus. Aquinas had placed the intension of forms in essence, while Aegidius Romanus placed it in existence. Henricus Gandavus entered the debate as a supporter of the thomistic position and he used the term latitudo to designate a property which belongs to the essence of the form. But the author of the Summa adopted the position of Aegidius Romanus and said that it is through existence that a form has latitude, this latitude being determined more or less perfectly when the form is in act in a subject. Thus Duhem concludes that the author of the Summa is maintaining the position of Aegidius Romanus in this controversy while using the new technical term latitudo introduced by Henricus Gandavus. He also points out that the expression latitudo formae occurs frequently in the writings of Durandus de S.

Porciano, O. P., who died in 1332.

Among the writers who may have influenced the author of the Summa, Duhem mentions Thomas Aquinas (d. 1274), Henricus Gandavus (d. 1293), Aegidius Romanus (d. 1316), Antoine André (d. *circa* 1320), Petrus Aureoli (d. 1322) and possibly Durandus de S. Porciano and Gregory of Rimini. Other than Aquinas, it is probable that none of these authors wrote any works prior to 1270. Therefore, it is certainly possible that the author of the *Summa* could have written that work earlier than 1350 even if he did use all of the sources suggested by Duhem.

Mandonnet's catalogue thesis attracted many critics, the foremost of whom was Martin Grabmann. In his monumental study, "Die Werke des Hl. Thomas von Aquin," Grabmann reviews the entire history of the thomistic corpus, going much further than Mandonnet in his study of the early catalogues and codices. Grabmann challenges the adequacy of the "official catalogue" as the sole criterion of authenticity and argues for the authenticity of several *opuscula* not listed in it. Since Grabmann also was not able to find any catalogue reference to the *Summa* prior to the *Tabula* of Petrus de Bergamo, the whole controversy does not affect the authenticity question of the *Summa*. The more significant result of Grabmann's research is that he could not find the *Summa*, with or without an ascription to Aquinas, in any codex prior to the last half of the fourteenth century. Thus, on this basis alone, he also had to consider it apocryphal.[44]

Grabmann did, however, call attention to Codex 2300 of the library of the University of Valencia. This fifteenth century manuscript contains many *opuscula* attributed to Aquinas, both authentic and apocryphal. The first five listed in the index to the manuscript are *Tractatus predicabilium*, *Predicamentorum*, *Perihermeneias*, *De syllogismis* and *De demonstratione*, which constitute, Grabmann believes, the *Summa totius logicae Aristotelis*.[45] As Grabmann points out, manuscripts of this work are very rare and the evaluation of the handwriting is very difficult. He also mentions that codex A. 1454 of the library of the Archiginnasio of Bologna contains the *Summa*, this manuscript dating from the fourteenth century.[46] Since it is so difficult to establish the authorship of the anonymous apocryphal *opuscula* from the handwriting, research has only been able to establish negatively that most of them are not works of Aquinas, as is the case of the *Summa*.

Grabmann then reviews some of the modern critics of the *Summa*. He points out that Prantl was not able to make any conjecture about the authorship of the *Summa*, even though he made a detailed study of the contents of the work. He thinks that a close reading of Prantl would point to Hervaeus Natalis as a possible author. This conjecture he rejects on the basis of studies by Maurice de Wulf and M. Baumgartner, and on the basis that Hervaeus teaches no real distinction between essence and existence whereas the *Summa* does.[47]

He then reviews the work of Duhem and Wild which I have cited above. Grabmann rightly points out that the conjectures about the nationality of the author based on the few textual clues about Prague (or Braga) and the expression "el correre mio" are based on the printed text of the Summa and that the manuscripts may differ substantially on these readings.[48] He then challenges Mandonnet's identification of the Summa with the Introductoria ad logicam found in the catalogue of Ptolomaeus de Lucca. His argument is that if the author of the Summa were familiar with the writers mentioned by Duhem and with Hervaeus Natalis as indicated by Wild, then he must have written after Ptolomaeus composed his catalogue about 1312-1317. He also rejects Mandonnet's interpretation of the name "Brunellus", claiming that in scholastic logic it has always been used as the name of an individual donkey and giving an example from the Summulae logicales of Petrus Hispanus.[49] The contribution of Grabmann is twofold. He has strengthened the negative proof that Aquinas did not write the Summa by a thorough examination of catalogues and codices of the fourteenth and fifteenth centuries as well as the few remaining from the thirteenth century. And he has cited two manuscripts which he believes contain the Summa. This second contribution I consider to be the most important because, as Grabmann stated, previous conjectures about the Summa have been based on the printed text which probably varies significantly from the manuscripts. Grabmann suggests investigation of the manuscripts as a fruitful course for future scholars of the Summa, and I have followed his advice, the results of which I will describe in the following chapter of this dissertation.

NOTES

[1] *Supra*, p. 19.

[2] Kruitwagen, p. 28.

[3] R. M. Spiazzi, O. P., "Introductio editoris," S. Thomae Aquinatis, *In Aristotelis libros Peri Hermeneias et Posteriorum Analyticorum expositio* (Turin, 1955), p. vii.

[4] Kruitwagen, pp. 28-33.

[5] Kruitwagen, pp. 28-33; p. 49.

[6] Mandonnet, *Des écrits ...* , pp. 11-12; J. Quétif and J. Echard, *Scriptores Ordinis Praedicatorum*, II (Paris, 1721), p. 313; Kruitwagen, p. 57; Johannes Franciscus Maria De Rubeis (Di Rossi), *De gestis et scriptis ac doctrina Sancti Thomae Aquinatis dissertationes* (Venice, 1750), reprinted in S. Thomae Aquinatis, *Opera omnia, issu impensaque Leonis* XIII. P. M., I (Rome, 1882).

[7] Mandonnet, *Des écrits ...* , pp. 11-12; Grabmann, p. 21.

[8] Kruitwagen, pp. 33-36.

[9] John Poinsot [Ioannes a Sancto Thomas, O. P.], *Cursus Philosophicus Thomisticus*, ed. Beato Reiser, O. S. B. (Turin, 1930-1937), Vol. III, p. 470.

[10] John Poinsot, *Ars logica*, *Cursus . . .* , Vol. I, p. 594b.

[11] Grisez, p. 12, *et passim*.

[12] Quétif-Echard, I, p. 340; Kruitwagen, p. 49.

[13] Kruitwagen, pp. 66-67.

[14] Quétif-Echard, I, p. 536.

[15] De Rubeis, Diss. XXIV, c. ii, 3. Reprinted in S. Thomae Aquinatis, *Opera omnia . . .* , I, p. cclxvi.

[16] Carl Prantl, *Geschichte der Logik im Abendlande*, Vol. III (Leipzig, 1927), p. 108, n. 484; pp. 250-57.

[17] Prantl, III, p. 250; *Summa totius logicae Aristotelis*, Sancti Thomae Aquinatis, *Opera omnia secundum impressionem Petri Fiaccadori Parmae 1852-1873 Photolithographice reimpressa*, ed. Vernon J. Bourke, Vol. XVII (New York, 1948), p. 107. I shall refer to this edition as Parma in this dissertation.

[18] Prantl, III, p. 250; Parma, 84B.

[19] Prantl, III, pp. 250-51.

[20] Martin Grabmann, *Handschriftliche Forschungen und Funde zu den philosophischen Schriften des Petrus Hispanus* (Munich, 1936), pp. 12-13; I. M. Bocheński, O. P., *A History of Formal Logic*, trans. and ed. Ivo Thomas, O. P. (Notre Dame, 1961), pp. 6-8.

[21] Pierre Duhem, "Note sur une Somme de Logique attribuée à Saint Thomas d'Aquin," *Revue de Philosophie*, XIV (Janvier-Juin, 1909), pp. 452-58.

[22] Duhem, p. 454.

[23] *Vide infra*, ch. III.

[24] Duhem, p. 454.

[25] F. C. Copleston, S. J., *A History of Philosophy*, Vol. III (London, 1953), p. 124-25. All dates of mediaeval writers in this chapter are from Copleston.

[26] Copleston, p. 124.

[27] Parma, p. 81A.

[28] Duhem, p. 456-57.

[29] Duhem, p. 457.

[30] Duhem, p. 458.

[31] Parma, p. 84B.

[32] Duhem, p. 458.

[33] Ignaz Wild, "Uber die Echtheit einiger *Opuscula* des Hl. Thomas," *Jahrbuch für Philosophie und spekulative Theologie*, XXI (1907), pp. 69-71; Michael de Maria, "Introductio," Sancti Thomae Aquinatis, *Opuscula*, Vol. I (Rome, 1886).

[34] Prantl, III, p. 271, n. 419; Parma, p. 56A.

[35] Wild, p. 71.

[36] Parma, p. 84B; p. 64.

[37] Parma, p. 107.

[38] Parma, p. 81A; Wild, p. 71.

[39] Parma, p. 71B.

[40] Mandonnet, Des écrits ..., ch. II.

[41] Mandonnet, Des écrits ..., p. 149.

[42] "Introduction," p. xliii-xliv.

[43] Pierre Duhem, Etudes sur Leonard de Vinci, Vol. III (Paris, 1913), pp. 318ff.

[44] "Die Werke . . . ," p. 237-42.

[45] "Die Werke . . . ," p. 238.

[46] "Die Werke . . . ," p. 238.

[47] "Die Werke . . . ," p. 239-40.

[48] *Vide infra*, ch. III.

[49] "Die Werke . . . ," p. 242; Petrus Hispanus, p. 87.

[50] Handschriftliche . . . , pp. 24-25.

CHAPTER III

SOME EXISTING MANUSCRIPTS OF THE SUMMA TOTIUS LOGICAE ARISTOTELIS

As I have noted in the previous chapter, Martin Grabmann is the first scholar in the four centuries following the publication of the letter of Hieronymus Monopolitanus to renew the search for manuscripts of the *Summa totius logicae Aristotelis*. I have read microfilms of the two codices which he believed to contain the *Summa*, and I have found them to be the two earliest known manuscripts of the work.[1] The earliest known manuscript of the *Summa* is Codex A. 1454 of the Bibliotecha Communale dell'Archiginnasio of Bologna (Bologna A. 1454). Carlo Lucchesi has described it thus:

> A. 1454.
>
> f.1) [*S. Thomae de Aquino* (cfr. Sancti Thomae Aquinatis *Opera Omnia*, Tom. xvii. Parma, Fiaccadori, 1864, pp. 54-117)] Totius logicae Aristotelis Sumna [*sic*], seu de praedicabilibus, de praedicamentis, de enuntiatione, de syllogismis et de demonstratione. *Inc*. Omnes homines naturaliter scire desiderant. Scire autem est effectus demonstracionis. Est enim demonstracio . . . *Des*. Et sic patet de certitudine et unitate scientiarum. de tractu autem demonstracionis dictum sit hoc etc. - f. 135v) "Compilatio libri elencorum" [seu Compendium tractatus *S. Thomae de Aquino* de fallaciis (Cfr. O. C., xvi, pp. 377-387)]. *Inc*. Incipit compilacio libri elencorum. (A)d noticiam habendam eorum quae atrahit (!) in libro elencorum quattor distinctiones in hoc tractatu assignamus . . . *Des*. Et ideo in talibus unica responsio danda non est. Et sic de fallaciis sit sillogismus - f. 144)

> . . . .
> Cartaceo (meno il primo quinterno e i fogli estremi dei quinterni successivi che sono membranacei), in 4° (mm. 185 x 128), della fine del sec. xiv, di ll. 23-27, leg. a cartoni.
>
> Prov. Domenicani.[2]

We know that the library which now contains this manuscript contains the library of a Dominican priory which was suppressed in 1797-1798.[3]

The film of Bologna A. 1454 which I studied was photographed very poorly and, though the hand is fairly legible, I was not able to read some parts of the film. The codex appears to be written by one hand, and it contains many corrections in the text itself and in the margins. The manner in which the corrections are made strongly indicates that this is not the author's autograph. While the hand has many features of an early fourteenth century hand, it also has some features of the late fourteenth century. If one can assume that the scribe was a religious, then one can date the codex by its late features and explain the early features by noting that styles of writing changed more slowly among religious scribes than among commercial and court scribes. In the description quoted above, Lucchesi dated this codex at the end of the fourteenth century and this seems to be correct. Since this codex is not the author's autograph, I am certain that the Summa was written no later than the fourteenth century. The film did not show a title page for this codex and I assume that it has none. The codex does not contain the title of the work nor its subtitle, and it gives no indication of the author of the work. Hence, one may conjecture that the Summa was not ascribed to Aquinas until the fifteenth century.

The second earliest manuscript containing the Summa is Codex 2300 of the Biblioteca Universitaria de Valencia (Valencia 2300), the other of the two manuscripts discovered by Grabmann and described by Marcelino Gutiérrez del Caño.[4] The codex contains an index which lists the titles of thirty-two opuscula varia of Aquinas which are in the codex. The first five titles are, in effect, the five treatises of the Summa. According to the catalogue description, the codex contains

> 244 hojas útiles, excepto la 1^a, a 37 líneas, foliacion 1 a 242. Vitela 0,232 alto x 0,155 ancho: caja escritura 0,152 x 0,105. Letra S. xv; capitales miniadas en oro y colores, otras alternando ayul y rojo, como ocurre con los calderones; reclamos cada diez hojas y notas marg.^{s}
> Piel labrada, sobre tabla; falto de broches y con cantos dorados.[5]

Even though the catalogue specifies only that the writing is from the fifteenth century, I believe that the date of the codex could be made more precise. From a limited knowledge of paleography, I am inclined to date the codex close to the middle of the fifteenth century, thus placing it some years after the Bologna codex. It is a beautifully written codex having comparatively few abbreviations and corrections.

On folio 2^a the index to the codex lists the first five opuscula as Tractatus predicabilium, Tractatus predicatorum, Tractatus piermenias, Tractatus de silogismis and Tractatus de demonstracione. On folio 3^a, however, there appears the title Incipit logica beati Thome feliciter, and the text of the Summa follows immediately. As far as I can determine, this codex is the earliest to attribute the Summa to Aquinas.

The next manuscript which contains the Summa is Codex 215 of the Codices Urbinates Latini of the Bibliotheca Apostolica Vaticana (Vat. Urb. lat. 215), which is described by Stornajolo[6] thus:

> 215. (olim 205). Saec. xv, mm. 361-256, ff. I. 307. S. Thomae de Aquino opera quaedam et opuscula genuina et supposititia, Pseudo-Augustini sermones ad fratres in eremo; sermo de festo corporis Christi.
> 1. (f. 1^v). De natura syllogismorum. Inc. Quoniam scire est causam rei cognoscere. Des. quod non sequitur necessarium. . . .
> 2. (f. 4^v). De totius logicae Aristotelis summa (in ms. loyga). Inc. Omnes homines naturaliter scire desiderant. Des. et sic patet de unitate scientiarum. . . .

The catalogue then gives the descriptions of the twenty-three other works in this codex. Of the codex itself, Stornajolo writes,

> Codicem in antiquo indice urbin. n. 153 signatum binis columnis librarius exaravit. Titulorum litterae in tribus prioribus operibus maiusculae, in reliquis minusculae rebrae, initiales maiores caeruleae ac rubrae alternae, initiales maximae aureae floribus ornatae sunt. In f. 1^v circulus auro, corona laurea, floribus, avibus, geniis ac tessera gentilicia Friderici Urbini ducis. Ff. I, 1^r, 147^v, 306^v, 307 vacua. In tegumenti dorso insignia gentilicia Alexandri VII.

This codex is a "de luxe" edition prepared especially for the library of Frederick, Duke of Urbino, who died about 1469. The writing is exquisite and very legible. There are almost no abbreviations in this type of luxury edition, since the intended readers are not presumed to be scholars. The scribe apparently had no knowledge of the subject matter and was unfamiliar with the appropriate interpretations of conventional abbreviations. Hence, in writing out the text with no abbreviations he supplied words and terminations for words which have no meaning in the context of the Summa. While this is by far the best of the manuscripts of the Summa, it is of little value for establishing critical readings of the text. The codex was definitely written about the middle of the fifteenth century, but not prior to 1450. The most probable date would be between 1450 and 1455.

The fourth and latest known manuscript of the Summa is in Codex 463 of the Barberini collection of the Bibliotheca Apostolica Vaticana (Vat. Barb. lat. 463). There is at present no critical catalogue of this collection, nor is the first part of the codex, in which the Summa appears, enumerated in the Handwritten Catalogue of the Vatican Library. A complete description of the codex appears in a dissertation of Joseph Wyss.[8] This codex contains thirty-five opuscula, of which the first five are the five treatises of the Summa. These five treatises are preceded by the title Incipit logica sanctissimi doctoris Thome de Aquino ordinis predicatorum, which Wyss fails to note in his description. The codex is dated 1469 at many places by the scribe. The text of the Summa is carelessly written in a northern German hand of the late fifteenth century, confirming the date which is given in the codex.

The four manuscripts of the Summa totius logicae Aristotelis all agree in the division of the work into five treatises, the first corresponding to the Isagoge of Porphyry, and the other four corresponding to the Categories, the De Interpretatione, the Prior Analytics and the Posterior Analytics of Aristotle, respectively. All the incunabula and the Parma edition divide the Summa into eight treatises by dividing the second treatise, "On the Categories," into four treatises, "On Substance," "On Quantity," "On Quality" and "On Relation." The incunabula and the Parma edition include the discussion on the "Six Principles" in the treatise on relation, but they begin a new numbering of the chapters for each of the six categories. The Mandonnet edition of the Summa divides the work into nine treatises by following the divisions of the incunabula and the Parma edition and by placing the "Six Principles" in a separate treatise, and it numbers the chapters in this additional treatise consecutively. No two manuscripts of the Summa agree in chapter divisions and no manuscript agrees in chapter divisions with the printed editions, but the printed editions agree in almost all the chapter divisions.

Several passages in the Summa are puzzling and suggest consultation of the manuscripts. The first is:

> Scire est autem effectus demonstrationis; est enim demonstratio syllogismus apodicon, idest faciens scire.[9]

This is a paraphrase of a passage in Aristotle[10] which reads in the mediaeval Latin version

> Demonstrationem autem dico syllogismum apodicticon, idest, facientem scire.[11]

Bologna A. 1454, Valencia 2300 and Vat. Barb. lat. 463 all have an expression that looks like "apodicticon." Vat. Urb. lat. 215 has an expression similar to the original Greek of Aristotle.

As I have noted in Chapter II, many arguments about the Summa have centered around the following passage:

> sicut dicitur civis a civitate, et pragensis a Praga.[12]

Bologna A. 1454, Valencia 2300 and Vat. Barb. lat. 463 all read:

> sicut dicitur civis a civitate, et burgensis a burgo.

Vat. Urb. lat. 215 reads "burgis" where the other manuscripts read "burgo." The manuscript reading is very plausible because in the mediaeval period a sharp distinction was made between a civitas and a burgus.[13] A civitas after the ninth century designated not only a city, but also the episcopal seat of a diocese. In many cases the sole importance of the civitas was the fact that it was the residence of a bishop and the center of his administration. On the other hand, towns which were small centers of commercial activity were established near fortresses and later enclosed by walls. These fortified mercantile towns received the name "burgus" and their inhabitants were called "burgenses." The names "civis" and "burgensis" were sometimes used interchangeably before becoming distinct. The writing in Vat. Barb. lat. 463 is very careless and the scribe occasionally missed the stroke which forms the lower curve of the letter 'b'. At first glance this manuscript could read "pragensis a Praga." But a closer examination of the letters shows conclusively that the reading should be "burgensis a burgo." Thus, since there is no manuscript justification for the reading "pragensis a Praga," all the previous discussion of the Summa based on this reading from the vulgate text may be disregarded.

The expression in the author's native language in the Summa appears in the following passage:

> hoc idem nos in logica vulgari: nam dicimus "el corere mio," ubi ly "el" est articulos.[14]

For the expression "el corere mio" Bologna A. 1454 reads "lucrari;" Valencia 2300 reads "lucrari [?];" Vat. Urb. lat. 215 reads "lucrari est ditari;" and Vat. Barb. lat. 463 is illegible at this point. The expression "el corere mio" occurs in none of the manuscripts, and apparently it was added by an editor of one of the incunabula. Hence, there is no justification for any of the arguments which are based on the vulgate text.

I consulted Professor Yakov Malkiel about the expression "el corere mio" and he replied as follows:

> Syntactically, the substantivated infinitive has been acceptable to all Romance languages, to the best of my

> knowledge at all evolutionary stages; _el_ _correr_ _mio_ is excellent Old Spanish, _il_ _correr(e)_ _mio_ would be its Old Italian (Tuscan) counterpart, while Old Galician-Portuguese stands apart (_o_ _correr_ _meu_). The simplification of -_rr_- to -_r_- is best understandable on the assumption that a Spanish original was copied in France, because Spanish scribes often used capital _R_ for -_rr_-, a device an inexperienced trans-Pyrenean copyist may have not readily understood; also a French copyist may, under the influence of Latin, have added an unwarranted final -_e_ (the assumption of Italian origin would be an alternative explanation of this particular feature). Finally, the definite article (masc. sing.) _ly_ points decidedly to Northern France; it was still in use there around 1350, but is likely to have disappeared fairly soon after. In other words, I feel that the _last_ redactor of the text was a Frenchman.[15]

I have presented evidence in Chapter II to indicate that Hieronymus Monopolitanus edited the text which is the source of the Parma edition and I would conjecture that he supplied the expression which became garbled by printers to "el corere mio." At the time he wrote his opinion of this passage, Professor Malkiel did not know that the manuscripts differed from the vulgate text. The theory of an Italian origin for this editorial addition would certainly fit Hieronymus Monopolitanus. Malkiel's opinion on the use of "ly" must be disregarded because I have since discovered that this passage, with the exception of "el corere mio," has been copied almost verbatim from a passage in the commentary which Aquinas wrote on the _De Interpretatione_, and "ly" also appears in that passage.[16]

I have made a systematic search for manuscripts of the _Summa_, and I have found only these four, two through the suggestions of Grabmann, one in the dissertation of Wyss and the last in a catalogue of Mohan.[16] I have checked all the manuscripts discussed by Mandonnet, Grabmann and Wyss and to the best of my knowledge there are no other codices containing the *Summa* other than those which I have discussed in this chapter. I am rather certain that more manuscripts exist, but they are difficult to discover because of the false attribution to Aquinas, the rather common *incipit* which the *Summa* has, and the fact that many manuscript collections are poorly catalogued or not catalogued at all.

NOTES

[1] "Die Werke . . . ," pp. 238-39.

[2] Carlo Lucchesi, *Inventari dei Manoscritti delle Biblioteche d'Italia*, ed. Antonio Sorbelli, Vol. 36 (Florence, 1926), p. 45. I shall refer to this codex as Bologna A. 1454.

[3] *Annuario delle Biblioteche Italiane*, Parte I (2d ed.; Rome, 1956) pp. 70-72.

[4] Marcelino Gutiérrez del Caño, *Catalogo de los Manuscritos Existentes en la Biblioteca Universitaria de Valencia*, Vol. III (Valencia, 1913), p. 240. I shall refer to this codex as Valencia 2300.

[5] Gutiérrez del Caño, p. 240.

[6] Cosimus Stornajolo, *Bibliotecae Apostolicae Vaticanae Codices Manu Scripti Recensiti*: Codices Urbinates Latini, Tomus I (Rome, 1902), pp. 205-207. I shall refer to this codex as Vat. Urb. lat. 215.

[7] Stornajolo, p. 207.

[8] Joseph M. Wyss, *De natura materiae attributed to St. Thomas Aquinas*, *Introduction and text* (Louvain, 1953), pp. 37-40. I shall refer to this codex as Vat. Barb. lat. 463.

[9] Parma, 54A.

[10] Aristotle, *Analytica Posteriora*, ed. W. D. Ross (Oxford, 1949), I.1; 71b17.

[11] S. Thomae Aquinatis, *In Aristotelis libros Peri Hermeneias et Posteriorum Analyticorum expositio*, ed. R. M. Spiazzi (Turin, 1955), I lectio iv, p. 159.

[12] Parma, p. 81B.

[13] Henri Pirenne, *Mediaeval Cities*, trans. Frank D. Halsey (Princeton, 1925), pp. 63-64; 156-58; 226.

[14] Parma, 84b.

[15] Letter from Professor Yakov Malkiel, Editor, *Romance Philology*, Berkeley, Calif., August 25, 1958.

[16] _In Aristotelis libros Peri Hermeneias . . ._, I, lectio v, p. 26.

[17] Gaudens E. Mohan, O. F. M., "Incipits of Logical Writings of the XIIIth - XVth Centuries," _Franciscan Studies_, XII (1952), p. 421.

CHAPTER IV

THE DEPENDENCE OF THE SUMMA TOTIUS LOGICAE ARISTOTELIS UPON WORKS OF AQUINAS

Many critics have noticed that some passages in the _Summa totius logicae Aristotelis_ are strikingly parallel to some corresponding passages in works of Saint Thomas Aquinas. While such passages are located all through the _Summa_, most of them are in the treatises "On Interpretation" and "On Demonstration." Aquinas commented on only two of the logical works of Aristotle, the _De Interpretatione_ and the _Posterior Analytics_. His commentary on the _De Interpretatione_ was unfinished at the time of his death and was completed by many other writers. Aquinas himself commented only as far as the middle of Chapter X (19b32).[1] Aquinas wrote a complete and very long commentary on the _Posterior Analytics_. A simple comparison of the texts of these two commentaries with the text of the _Summa_ leaves little doubt that the author of the _Summa_ used them extensively, though he nowhere acknowledges this fact, nor does he even mention the name of Aquinas. It is certainly reasonable to conjecture that those who attributed the _Summa_ to Aquinas based their decisions on the author's frequent quotations and paraphrases of passages in the works of Aquinas. To them the author's use of Aquinas probably indicated an intention to write a logic that was at least faithful to Aquinas, if it were not by Aquinas himself. The title *Logica beati thome*, which the *Summa* received so often, conceals this ambiguity.

I have found in the *Summa* three levels of reference to the two commentaries of Aquinas mentioned above. The first level is that of direct quotation, the second that of inaccurate quotation and the third that of loose quotation or paraphrase. I have indicated some of the instances of each of these levels by placing before and after the passages in question an "ϵ" for the first level, a "φ" for the second level and a "ψ" for the third level. Since no one knows which codices of the commentaries were used by the author of the *Summa*, I have used the Spiazzi edition of the commentaries and my indications of the three levels are not definitive.

NOTES

[1] S. Thomae Aquinatis, _In Aristotelis libros Peri Hermeneias et Posteriorum Analyticorum expositio_, ed. R. M. Spiazzi, O. P. (Turin, 1955). Aquinas' commentary on the _De Interpretatione_ ends on page 88 of this edition. Cf. R. M. Spiazzi, "Introductio editoris," S. Thomae Aquinatis, _In Aristotelis libros Peri . . ._, for the details about this unfinished commentary.

CHAPTER V

THE FORMAL LOGIC OF THE SUMMA TOTIUS LOGICAE ARISTOTELIS

Although the title of the _Summa totius logicae Aristotelis_ would seem to indicate that this book is a summary of the entire Aristotelian logic, it is essentially a work in which the author presents an explanation of the _logica nova_, the logic of definition and demonstration, oriented toward its use in metaphysics. The author excludes from consideration the _Topics_ and the _Sophistical Refutations_[1] as well as the other parts of the logica moderna, for his interest is metaphysical certitude and not dialectics and the logic of invention. In a work of its kind the detailed presentation of a formal system is somewhat subordinate to the main purpose of the author, but, nevertheless, the formal system must be reasonably sound and complete if the author is to achieve any significant understanding and interpretation of his subject. And although the title would seem to indicate that the logic of this work is that of Aristotle, in the light of the history of philosophy it is certainly more reasonable for the contemporary reader to interpret this claim as referring to the Aristotelianism of the thirteenth century. Therefore, any evaluation of the _Summa_ and its position in the history of logic depends, to some extent on the value of the logic which the author accepted from his predecessors and the historical development of this logic.

To illustrate the character of the logic accepted by the author I shall analyze his presentation of the categorical assertoric syllogism, the syllogism *par excellence*, in this chapter. And to illustrate the historical relation of the syllogistic of the *Summa* to the Aristotelian logic of the thirteenth century, I shall compare the treatment of the syllogistic in the *Summa* with that in the *Summulae logicales* of Petrus Hispanus, the best-known logic textbook of the mediaeval period.[2] It seems impossible to believe that the author of the *Summa* was not familiar with this work or with some of the many variations of it which were in circulation in the late thirteenth and fourteenth centuries. But if he had been familiar with it, one may question why he ignored almost completely the *logica moderna* presented in the last six treatises of the *Summulae*, for some parts of it would have improved his logic. As I shall show in this chapter, Petrus Hispanus failed to make full use of the *logica moderna* in his syllogistic, but the author of the *Summa* seems to be unaware of it, just as he is unaware of other developments of logic in the fourteenth century, such as the work of Ockham, Buridan and Burleigh. In my discussion of the syllogistic I shall formalize and systematize the theories found in the *Summa* and the *Summulae*, following their order of presentation as much as possible. For purposes of evaluation, however, I shall deviate from their frameworks and work out the implications of their systems.

As a preliminary to my discussion I should like to point out a terminological distinction common to many of the scholastic logicians. Petrus Hispanus states it in this way:

> Sciendum autem quod propositio, quaestio et enuntiatio et conclusio sunt idem in substantia sed differunt secundum rationes, quia diversas habent rationes sicut definitiones, ut prius patuit. Secundum enim quod dubitatur est _quaestio_, prout autem probata est per argumentum est _conclusio_, secundum autem quod ponitur in praemissis est _propositio_, sed cum absolute pronuntiatur est _enuntiatio_.[3]

Except for the term "quaestio," the author of the _Summa_ makes the same distinctions.[4] Despite their explicit statements of this distinction, neither author consistently adheres to it. In the following discussion I shall follow their actual usage of these terms as much as possible.

For the author of the _Summa_, an enunciation is a sentence signifying something true or false.[5] He states that Aristotle divides enunciations in three ways.[6] The first division is into enunciations which are one simply and those which are one by conjunction. The enunciation which is one simply is the categorical enunciation which has as its principal parts a subject and a predicate. For example, "Man is an animal" is a categorical enunciation whose principal parts are the subject, "man," and the predicate, "animal."

The word "is," which is the third part joining the other two, is a conjunction or a verbal copula. The enunciation which is one by conjunction is the hypothetical enunciation, which, as the author states in another place,[7] is the generic name for enunciations which have as their principal parts two categorical enunciations. The second division of enunciations is that into affirmative and negative enunciations. The third division of enunciations is that into universal, particular, singular and indefinite enunciations. The author explains these divisions in great detail and, though his exposition is much longer than that of Petrus Hispanus, he does not differ significantly on logical doctrine from Petrus.[8]

In his consideration of the opposition of categorical enunciations the author of the Summa states that things are opposed in four ways: relatively, contradictorily, privatively, and contrarily.[9] This is a close parallel to a passage in the Categories[10] in which Aristotle says,

> Things are said to be opposed (1) as correlatives to one another; (2) as contraries to one another; (3) as privatives to positives; (4) as affirmatives to negatives.

In the context of a general discussion of opposition, the author explains the opposition of contradictory and contrary enunciations, and he explains why the particular affirmative and the particular negative enunciations are not opposed. The universal affirmative and the universal negative enunciations are opposed as contrary enunciations. The universal affirmative and the particular negative enunciations are opposed as contradictory enunciations. The universal negative and the particular affirmative enunciations are opposed as contradictory enunciations. The particular affirmative and the particular negative enunciations are not opposed at all, but they are called subcontrary enunciations because they stand under the contraries. He also explains the oppositions which can exist between singular enunciations, and he states that indefinite enunciations follow the rules of particular enunciations. Petrus Hispanus gives virtually no explanation of opposition, but merely states which enunciations are opposed.[11]

The author of the Summa then explains how enunciations equivalent to the universal affirmative, universal negative, particular affirmative and particular negative enunciations may be formed by placing negation signs before the quantifiers of these enunciations, after the quantifiers and both before and after the quantifiers.[12] While his discussion of these equivalences is much shorter than that of Petrus Hispanus,[13] he does not mention as many equivalent expressions as Petrus does, nor is his mnemonic verse as complete as that of Petrus.

In discussing the truth conditions of opposed categorical enunciations, the author of the Summa distinguishes three types of subject matter about which categorical enunciations can be made, depending upon the relation of the subject to the predicate.[14] An enunciation is said to be in natural or necessary matter if the predicate pertains to the essence of the subject or follows from the essential principles of the subject. An enunciation is said to be in remote or impossible matter if the predicate is excluded from the subject by reason of the subject's essence or essential principles. An enunciation is said to be in contingent matter if the predicate is attributed to the subject by reason of some singular object in which it is found. From this it follows that the truth conditions of opposed enunciations will vary according to the subject matter of the enunciations. In natural and remote matter, if one contrary is true, the other will be false and conversely. Likewise, in natural and remote matter, if one subcontrary is true, the other will be false and conversely. In contingent matter, however, both contraries may be false and both subcontraries may be true. In every type of matter, if one contradictory is true, the other must be false, and conversely. The author does not state explicitly that in contingent matter both contraries cannot be true and both contraries cannot be false. He does mention that Aristotle stated that both contraries cannot be true, but he neglects to state this as his own teaching. Perhaps he felt that he did not need to state explicitly that both contraries cannot be true and both subcontraries cannot be false because these truth conditions are implied by his explanation of contraries and subcontraries and because they are implied by the truth conditions explicitly stated. Petrus Hispanus states all the possible truth conditions for all types of matter in short, concise laws.[15] He includes a law for subalternation which the author of the Summa omitted: if the universal is true, the particular is true, but not conversely; if the particular is false, the universal is false, but not conversely. Here again, the author of the Summa neglected to state a logical law in its appropriate place, though he states or implies it in two other passages.[16]

The author of the Summa defines argumentation as the significant utterance of the movement of reason from something known to something unknown, or from something better known to something less known.[17] It has four species: the syllogism, the enthymeme, induction and example. Of these, the syllogism is the most perfect and complete, and all the others are reduced to it. Petrus Hispanus defines argumentation as a discourse [oratio] explaining an argument, but he lists the same species as the author of the Summa.[18]

The author of the Summa defines a syllogism as a discourse in which, from some things posited and conceded, something else necessarily follows through that which has been posited and conceded.[19] This is a fairly close approximation to the definition of Aristotle, "A syllogism is discourse in which, certain things being stated, something other than what is stated follows of necessity from their being so."[20] And here the author uses the word "proposition" to indicate an enunciation which is used as a premiss from which a conclusion follows in argumentation. From this point of his exposition to the end of the discussion of the syllogism, the author uses the words "enunciation" and "proposition" interchangeably, though he uses the word "proposition" more frequently. The premisses of a syllogism are propositions, while the conclusion is not. The term is that into which a proposition is resolved. All knowledge is judicative and is the result of demonstrative syllogisms. The judgment is a right determination of reason, and this occurs when reason resolves the results of principles into their principles, or the caused into its causes. Hence, it is through the resolution of propositions into their terms that we have knowledge of things or concepts. But in this context the conclusion of a demonstration is certainly a proposition, for it is the end of scientific knowledge and it can be resolved into its terms.

The discussion of the "simple syllogism" in the Summa is a description and an explanation of the formal characteristics of syllogistic arguments.[21] In considering the syllogism simply, the author does not consider the subject matter of the propositions or whether the matter is necessary or probable, but only the ordering or structure of the syllogism. He states that in every type of matter, if there are true or probable premisses, then a true or probable conclusion always follows. This is a close as the author ever comes to defining what a valid argument is. That such an ordering of the premisses is good, that is, valid, is proved through two self-evident principles, the Dictum de omni and the Dictum de nullo. What the author means is that any valid argument can be established through these two principles, and if it should have true or probable premisses, then it would also have a true or probable conclusion.

The Dictum de omni states that nothing is taken under the subject about which the predicate is not said. To understand this principle, we can reword it thus: Nothing about which the predicate is not said is taken under the subject. By obverting the latter, we get: Everything about which the predicate is not said is not taken under the subject. Then by contrapositing this, we get: Everything which is taken under the subject is something about which the predicate is said. And we may do the same for the Dictum de nullo, which states: Nothing is taken under the subject about which the predicate is not denied. Rewording this, we get: Nothing about which the predicate is not denied is taken under the subject. Obverting this, we get: Everything about which the predicate is not denied is not taken under the subject. And by contrapositing the latter, we get: Everything taken under the subject is something about which the predicate is denied.

The Dictum de omni is essentially a description of the major premiss of an affirmative syllogism in the first figure. In such syllogisms the major premiss states that everything which is taken under the subject M is something about which the predicate P is said. This justifies saying that, since, by virtue of the minor premiss, every or some S is M, therefore every S is P or some S is P. And the Dictum de nullo is essentially a description of the major premiss of a negative syllogism in the first figure. In such syllogisms the major premiss states that everything which is taken under the subject M is that about which the predicate P is denied. This justifies saying that, since, by virtue of the minor premiss, every S is M or some S is M, therefore no S is P or some S is not P.

The two Dicta yield all the syllogisms of the first figure and exemplify a general pattern first recognized by Kant.[22] In the major premiss a rule is taken to the effect that all or no members of a class possess a certain property. In the minor premiss it is noted that certain objects belong to that class or are cases to which the rule applies. These two premisses justify concluding to a result that the objects in question possess the property if the rule is affirmative, or do not possess the property if the rule is negative. Since the two particular moods of the first figure are easily deducible from the two universal moods and since the author of the Summa claims that all other moods can be reduced to the Dicta, or to cases in which the Dicta are exemplified, it is clear that he is taking the two universal moods of the first figure, Barbara and Celarent, as axioms.[23]

Since syllogisms occur in different figures, some of them cannot be proved immediately through the two Dicta.[24] Hence, the author of the _Summa_ states a third principle through which such syllogisms may be reduced to one or the other of the two _Dicta_. The third principle is this: If from the opposite of the consequent there is inferred the opposite of the antecedent of the first conclusion, then the first consequence was valid. The reductions of syllogisms to either of the _Dicta_ through this principle is called reduction _per impossibile_, or the conversive syllogism. Some syllogisms are reduced to one of the two _Dicta_ through the conversion of one or more of their propositions, but since conversion itself is proved through the third principle, these syllogisms also depend upon the third principle for their reduction. This third principle is the only other axiom which the author of the _Summa_ admits using.

Petrus Hispanus states the same two _Dicta_ and he states another version of the third principle, but he does not make extensive use of them.[25]

To complete his discussion of reduction, the author of the _Summa_ then explains conversion.[26] To convert a proposition, one makes a predicate from the subject and a subject from the predicate so that what was converted being true, that into which it is converted will also be true. The author is only concerned with valid conversions here. The simple conversion of an universal affirmative proposition does not satisfy this criterion. For if we convert "Every man is an animal" into "Every animal is a man," the converse is false even though the original proposition is true. Among finite, that is, definite or non-negative, terms there are two kinds of conversion, simple and accidental. In simple conversion the subject becomes the predicate and the predicate becomes the subject while the quantity and quality of the second proposition remain the same as in the first. In accidental conversion the subject becomes the predicate and the predicate becomes the subject and the quality of the second proposition remains the same as the first, but the quantity changes. The universal negative and the particular affirmative propositions convert simply, while the universal affirmative and, according to some, the universal negative propositions convert accidentally. The author points out that we do not have to assume the accidental conversion of the universal negative proposition since we can arrive at its converse by converting it simply and then infer the subcontrary of the simple converse.

The proofs which the author uses to establish the validity of the conversions which he accepts are worth examining in detail. Since he is not concerned with the subject matter of syllogisms or their propositions, but only with their form, he states his arguments in transcendental terms,[27] that is, he uses term variables. He begins with the simple conversion of the universal negative proposition. "No B is

A" converts to "No A is B." To prove this he must show that the opposite of the antecedent, "No B is A," is inferred from the opposite of the consequent, "No A is B." Each of these propositions has a contradictory opposite and a contrary opposite. The author chooses to use the contradictory opposite. The contradictory opposite of the consequent, "No A is B," is "Some A is B." From "Some A is B" it follows that "Some B is A," which he will prove later. But "Some B is A" is the contradictory opposite of the antecedent. Therefore, the contradictory opposite of the antecedent is inferred from the contradictory opposite of the consequent, and the first consequence is valid. In the proof, however, he assumed the conversion of the particular affirmative proposition, which he must now prove.

To show that "Some B is A" may be validly inferred from "Some A is B" the author substitutes terms for variables in the two propositions so that "Some A is B" becomes "Some man is an animal" and "Some B is A" becomes "Some animal is a man." Assuming that "Some man is an animal" is true, it designates a certain man and a certain animal, since it is only true if it is exemplified in some designated man. If this is the case, then one can designate that individual in which humanity and animality are found and assign him a name, for instance, Socrates. Then the author constructs the following argument, which he calls an expository syllogism:

Some man is an animal.

Socrates is this man.

Socrates is this animal.

Therefore, this animal is this man.

Therefore, some animal is a man.

And thus the inference of "Some animal is a man" from "Some man is an animal" justifies the inference from "Some A is B" to "Some B is A."

Analyzing the argument in this way, it is evident that the inference from "Some man is an animal" to "Socrates is this man" and "Socrates is this animal" depends upon the use of a rule of inference which is called existential instantiation in modern logic. The inference from "Socrates is this man" and "Socrates is this animal" to "This animal is this man" depends upon the use of a rule of identity. And the inference from "This animal is this man" to "Some animal is a man" depends upon the use of a rule of inference which is called existential generalization in modern logic. Hence, the expository syllogism actually is a sequence of inferences using the rules of existential instantiation, identity and existential generalization. Furthermore, since the entire justification for conversion offered by the author of the Summa depends upon the expository syllogism, either the expository syllogism or the three rules of inference which it embodies must be added to the primitive principles of his system, a fact which he does not acknowledge and of which he seems to be unaware.

Having justified the conversion of the universal negative proposition, the author then turns his attention to the particular affirmative proposition. He notes that it can be converted simply and that he has just proved this through an expository syllogism. He also states that this conversion can be proved through the third principle. In this case, however, the proof depends upon the conversion of the universal negative proposition which, in turn, depends upon the conversion of the particular affirmative proposition as established through the expository syllogism. He seems to be unaware of the fact that a proof for the conversion of the particular affirmative proposition through the third principle is dependent upon the proof through the expository syllogism.

The author proves the accidental conversion of the universal affirmative proposition through the third principle, using a contradictory as opposite of the consequent and a contrary as opposite of the antecedent, and using the conversion of the universal negative proposition. Thus this conversion also depends upon the expository syllogism.

The author claims to prove that the particular negative proposition cannot be converted by the use of the third principle. But his proof depends upon the expository syllogism also. He also indicates the invalidity of this conversion by pointing out a substitution instance of this inference which yields a true premiss and a false conclusion: some animal is not a man, therefore some man is not an animal.

Hence, the author of the Summa establishes the validity or invalidity of conversions of categorical propositions not, as he claims, only through the third principle, but through the third principle and the expository syllogism. It is also clear at this point that he has an accurate idea of what constitutes a formally valid argument.

The simple and accidental conversions listed by Petrus Hispanus are the same as those proved valid by the author of the Summa, but Petrus does not offer any proofs for them.[28] He does, however, mention another type of conversion which is discussed in a later part of the Summa.[29] This is conversion by contraposition, or contraposition. According to Petrus, both the universal affirmative and the particular negative propositions can be validly contraposited. He says nothing about the accidental contraposition of the universal negative proposition. It is interesting to note that neither author ever mentions the obversion of propositions, or even anything close to it, even though Aristotle had something to say on this subject in the De Interpretatione and in the Prior Analytics.[30] In admitting the contraposition of the universal affirmative and particular negative propositions, Petrus Hispanus is simply following a tradition that dates back to Aristotle. On the other hand, the author of the Summa reveals a stronger than usual aversion for negative, or indefinite, terms by his silence on the subject of contraposition when discussing conversion and then adding it as an afterthought.

Having established these preliminaries, the author of the Summa then proceeds to discuss the categorical syllogism or, as he calls it, the ostensive assertoric [de inesse] syllogism.[31] Every such syllogism consists of three statements, two of which are propositions and the other is the conclusion. For example,

Every animal is a substance.
Every man is an animal.
Therefore, every man is a substance.

In this syllogism the first proposition is the major premiss, the second proposition is the minor premiss and the third statement is the conclusion. From the context of his discussion it is safe to assume that he has, in effect, defined the major and minor premisses by their location in the syllogism. The three statements in this syllogism contain only three terms, each of which is used twice. The term taken twice in the premisses is called the middle term. The term taken with the middle term in the major premiss is called the major term. And the term taken with the middle term in the minor premiss is called the minor term. If the major term is predicated of the minor term in the conclusion, then the syllogism is said to conclude directly. If the minor term is predicated of the major term in the conclusion, then the syllogism is said to conclude indirectly. The definitions of major term, minor term, syllogism concluding directly and syllogism concluding indirectly all tend to confirm the assumption that the author has defined the major and minor premisses by their location in the syllogism. The order of the terms in the premisses determines the figure of a syllogism. If the middle term is the subject of one of the premisses and the predicate of the other, then the syllogism is in the first figure. If the middle term is the predicate of both premisses, then the syllogism is in the second figure. If the middle term is the subject of both premisses, then the syllogism is in the third figure. The middle term is never placed in the conclusion. The mood of a syllogism is the order of its premisses according to their quantity and quality.

In accordance with his general method throughout the Summa, the author offers explanations of the definitions which he has stated. The major term is so called because it is the more universal of the three terms and the one which is better known to us, occurring first to our intellect. The middle term is so called because it is not as universal as the major term, yet it is the second of the three in comparative universality and the second to occur to the intellect. The minor term is so called because it is the least universal of the three, the least known to us and the last to occur to the intellect. The major premiss states that the first, or major, term inheres in the second, or middle, term. The minor premiss states that the second, or middle, term inheres in the third, or minor, term. And the conclusion states that the first, or major, term inheres in the third, or minor, term. Although the author does not acknowledge it, it should be clear that these explanations apply only to the affirmative syllogisms of the first figure concluding directly, a fact recognized by Aristotle.[32]

The description of the syllogism given by Petrus Hispanus differs only slightly from that presented by the author of the Summa.[33] Petrus Hispanus defines the major term as that term taken with the middle term in the major premiss. He never states explicitly that the major premiss is defined as the first premiss, but this interpretation is very plausible in the context of his discussion. Petrus does not present detailed explanations of the syllogism comparable to those given by the author of the Summa. I have noted at the beginning of this chapter that I am considering only what the author of the Summa calls the ostensive assertoric syllogism, the syllogism par excellence. Petrus Hispanus calls it only the syllogism.

The general descriptions of the syllogism in the Summa and in the Summulae differ only slightly from that which is found in logics of the late renaissance and early modern periods which are the sources of the contemporary textbook presentations of the syllogistic. The principal difference lies in the definitions. A modern text, such as that of Bocheński,[34] defines the major term as the predicate of the conclusion and the minor term as the subject of the conclusion. It then defines the major premiss as that premiss in which the major term is taken with the middle term and the minor premiss as that premiss in which the minor term is taken with the middle term. With these definitions the order of the premisses is irrelevant, except for practical considerations, and the total number of possible syllogisms is 256 distinct moods. The Summa and the Summulae follow the tradition of Boethius[35] by defining the major and minor premisses as the first and second premisses respectively and then defining the major and minor terms by their occurrence in these premisses. They thus add an additional variable factor which serves to double the number of possible syllogistic moods. Two syllogisms having the same premisses in different orders will be in two different moods, and their major and minor terms will be different. The Summa and the Summulae remain faithful to the Aristotelian tradition of three figures, whereas the modern text usually admits four.

The author of the Summa makes a distinction between useful and useless syllogisms,[36] which corresponds to the distinction between valid and invalid syllogisms. A syllogism is useless if one can find in any kind of subject matter true premisses and a false conclusion for that syllogism, that is, a syllogism is useless, or invalid, if one can find a substitution instance for its mood which yields true premisses and a false conclusion. A true, that is, useful or valid, syllogism is one in which in any kind of subject matter a true conclusion will follow if the premisses are true. The author presents a set of rules by which one can determine which syllogisms are useless, that is, a set of rules for determining which syllogistic moods in the three figures are invalid. Presumably one can accept the others as valid. Of the rules which he presents, I shall not discuss two of the less important ones since they have little bearing on the formal system. These rules state that syllogisms with two singular premisses and syllogisms with two indefinite premisses are useless. According to the author, the following set of rules will determine the useless or invalid moods of the syllogism in all the figures:

1. If both premisses are negative, the syllogism is invalid.

2. If both premisses are particular, the syllogism is invalid.

3. If the minor premiss is negative in syllogisms of the first figure concluding directly or in syllogisms of the third figure, the syllogism is invalid.

4. If the major premiss is particular in syllogisms of the first figure concluding directly or in syllogisms of the second figure, the syllogism is invalid.

5. If either premiss is negative, the conclusion must be negative. [Otherwise the syllogism is invalid.]

6. If either premiss is particular, the conclusion must be particular. [Otherwise the syllogism is invalid.]

The first four rules are rules of invalidation. Any syllogism which satisfies any one of these rules is invalid. Rules 5 and 6 do not properly belong to this set of rules of invalidation, for any syllogism which fails to satisfy them is invalid. They properly belong to a set of rules of validation, and if such a set is complete, then any syllogism satisfying all of that set's rules is valid. Rules 5 and 6, in the context of the author's discussion, need to be qualified to the effect that any syllogism which fails to satisfy them is invalid, and I am assuming that qualification in this chapter so that they may function as rules of invalidation. Rule 5 needs a further qualification which is consistent with the text of the Summa, though its textual support is weak. I will assume this qualification as rule 5':

> 5'. If neither premiss is negative, the conclusion is affirmative. [Otherwise the syllogism is invalid.]

In discussing the syllogisms which conclude indirectly,[37] the author of the Summa adds another rule:

> ψ. If a syllogism concludes [validly] to a conclusion which can be converted [validly], it can also conclude [validly] to the converse of the [direct] conclusion.

The difficulty with rule 4 is that it is not very helpful. While it confirms the validity of some moods, one cannot, without committing a formal fallacy, formulate a corresponding rule which would invalidate many invalid moods.

In the set of rules offered by the author of the Summa there is a clear confusion between rules of validation and rules of invalidation. The question does arise, however, whether the set which he does present is complete, that is, does it validate all the valid moods and invalidate all the invalid moods. A simple inspection of the rules is sufficient to indicate that the answer is probably negative. The most obvious omission from the author's rules is a rule or rules governing the distribution of terms. While rules 3, 4 and 6 of the original set do yield some of the effects of rules of distribution, it is obvious that they cannot cover all the possible cases.

Before demonstrating that the rules of the author of the Summa are incomplete, I will present the rules given by Petrus Hispanus in the Summulae logicales, making the same assumptions which I made for the author of the Summa except where noted.[38]

A. If both premisses are negative, the syllogism is invalid; whence one premiss must be affirmative.

B. If both premisses are particular, the syllogism is invalid; whence one premiss must be universal.

C. If the minor premiss is negative in syllogisms of the first figure concluding directly or in syllogisms of the third figure, the syllogism is invalid.

D. If the major premiss is particular in syllogisms of the first figure concluding directly or in syllogisms of the second figure, the syllogism is invalid.

E. If either premiss is particular, the conclusion is particular, but not conversely. [Otherwise the syllogism is invalid.]

F. If a syllogism in the second figure has two affirmative premisses, it is invalid.

G. Only a particular conclusion can be drawn [validly] in the third figure.

H. Every syllogism concluding [validly] to a particular negative conclusion can conclude [validly] to it indirectly.

I. No syllogism concluding [validly] to a particular negative conclusion indirectly can conclude [validly] to it directly.

It is curious to note that rule 5 of the *Summa* has no counterpart in the rules of the *Summulae*, but Petrus Hispanus seems to assume it. Hence, we may add:

J. If either premiss is negative, the conclusion is negative. [Otherwise the syllogism is invalid.]

J'. If neither premiss is negative, the conclusion is affirmative. [Otherwise the syllogism is invalid.]

In rule E the *Summulae* make an allowance for subaltern moods which the author of the *Summa* did not make. Neither author ever mentions the subaltern moods. Rule ψ of the *Summa* has no counterpart in the *Summulae*. Rules F and G have no counterparts in the *Summa*, though the author of the *Summa* observes that the syllogisms which he lists as valid in the second figure all have negative conclusions and the syllogisms which he lists as valid in the third figure all have particular conclusions.[39] The *Summulae* also do not have the rules of distribution. But they do have the rules of the *Summa* which give some of the effects of the rules of distribution, and they have rules F and G which help to reinforce these rules. Rules H and I are ambiguous and of dubious value. It is impossible to formulate them as rules of invalidation. Thus Petrus Hispanus also provides a mixture of rules of validation and rules of invalidation. I shall also demonstrate that his set of rules is incomplete.

Neither author discusses the subaltern moods, though Petrus Hispanus makes allowance for them in rule E. The following rule may be assumed as consistent with the systems of each of them:

> φ. If a syllogism concludes validly to a universal conclusion, then another mood with the same premisses concluding to the subaltern of the first conclusion is valid.

This rule will serve to validate some moods, but no corresponding rule of invalidation may be formulated.

I shall now demonstrate that the sets of rules offered by the Summa and the Summulae are not complete. The descriptions and definitions of both texts admit 512 possible syllogisms, or syllogistic moods, in three figures. The first figure is subdivided into a direct first figure in which the middle term is the subject of the major premiss and the predicate of the minor premiss, and an indirect first figure in which the middle term is the predicate of the major premiss and the subject of the minor premiss. Neither author makes this distinction, but it is necessary for a discussion of the complete system. The direct first figure and the indirect first figure each have sixty-four moods concluding directly and sixty-four moods concluding indirectly. The second and third figures each have sixty-four moods concluding directly and sixty-four moods concluding indirectly. I shall designate the 512 possible syllogistic moods in the conventional manner with a few variations. I shall designate the indirect first figure by "1'" and I shall designate a mood concluding indirectly by placing a prime sign (') after the name of the mood. I shall now present each of the 512 possible syllogistic moods and indicate which rules of the Summa and of the Summulae, if any, invalidate it by placing under it the numbers or letters of the appropriate rules. Since rules A, B, C, D, J, J' and E of the Summulae invalidate the same moods as rules 1, 2, 3, 4, 5, 5' and 6 of the Summa, I have omitted these letters for the sake of clarity. I shall indicate the name of each mood and which ones are valid.

All B is A
All C is B
All C is A

AAA-1. Valid.

All B is A
All C is B
All A is C

AAA'-1

All B is A
All C is B
Some C is A

AAI-1. Valid.

All B is A
All C is B
Some A is C

AAI'-1. Valid.

All B is A
All C is B
No C is A
5'
AAE-1

All B is A
All C is B
No A is C
5'
AAE'-1

All B is A
All C is B
Some C is not A
5'
AAO-1

All B is A
All C is B
Some A is not C
5'
AAO'-1

All B is A	All B is A
No C is B	No C is B
All C is A	All A is C
3, 5	5
AEA-1	AEA'-1
All B is A	All B is A
No C is B	No C is B
No C is A	No A is C
3	
AEE-1	AEE'-1
All B is A	All B is A
No C is B	No C is B
Some C is A	Some A is C
3, 5	5
AEI-1	AEI'-1
All B is A	All B is A
No C is B	No C is B
Some C is not A	Some A is not C
3	
AEO-1	AEO'-1. Valid.

All B is A	All B is A
Some C is B	Some C is B
All C is A	All A is C
6	6
AIA-1	AIA'-1

All B is A	All B is A
Some C is B	Some C is B
No C is A	No A is C
5', 6	5', 6
AIE-1	AIE'-1

All B is A	All B is A
Some C is B	Some C is B
Some C is A	Some A is C
AII-1. Valid.	AII'-1. Valid.

All B is A	All B is A
Some C is B	Some C is B
Some C is not A	Some A is not C
5'	5'
AIO-1	AIO'-1

All B is A
Some C is not B
All C is A
3, 5, 6
AOA-1

All B is A
Some C is not B
All A is C
5, 6
AOA'-1

All B is A
Some C is not B
No C is A
3, 6
AOE-1

All B is A
Some C is not B
No A is C
6
AOE'-1

All B is A
Some C is not B
Some C is A
3, 5
AOI-1

All B is A
Some C is not B
Some A is C
5
AOI'-1

All B is A
Some C is not B
Some C is not A
3
AOO-1

All B is A
Some C is not B
Some A is not C

AOO'-1

No B is A No C is B No C is A 1,3 EEE-1	No B is A No C is B No A is C 1 EEE'-1
No B is A No C is B Some C is A 1,3,5 EEI-1	No B is A No C is B Some A is C 1,5 EEI'-1
No B is A No C is B All C is A 1,3,5 EEA-1	No B is A No C is B All A is C 1,5 EEA'-1
No B is A No C is B Some C is not A 1,3 EEO-1	No B is A No C is B Some A is not C 1 EEO'-1

No B is A	No B is A
All C is B	All C is B
No C is A	No A is C
EAE-1. Valid.	EAE'-1. Valid.
No B is A	No B is A
All C is B	All C is B
Some C is A	Some A is C
5	5
EAI-1	EAI'-1
No B is A	No B is A
All C is B	All C is B
All C is A	All A is C
5	5
EAA-1	EAA'-1
No B is A	No B is A
All C is B	All C is B
Some C is not A	Some A is not C
EAO-1. Valid.	EAO'-1. Valid.

No B is A	No B is A
Some C is B	Some C is B
No C is A	No A is C
6	6
EIE-1	EIE'-1
No B is A	No B is A
Some C is B	Some C is B
Some C is A	Some A is C
5	5
EII-1	EII'-1
No B is A	No B is A
Some C is B	Some C is B
All C is A	All A is C
5,6	5,6
EIA-1	EIA'-1
No B is A	No B is A
Some C is B	Some C is B
Some C is not A	Some A is not C
EIO-1. Valid.	EIO'-1

No B is A
Some C is not B
No C is A
1,3,6
EOE-1

No B is A
Some C is not B
No A is C
1,6
EOE'-1

No B is A
Some C is not B
Some C is A
1,3,5
EOI-1

No B is A
Some C is not B
Some A is C
1,5
EOI'-1

No B is A
Some C is not B
All C is A
1,3,5,6
EOA-1

No B is A
Some C is not B
All A is C
1,5,6
EOA'-1

No B is A
Some C is not B
Some C is not A
1,3
EOO-1

No B is A
Some C is not B
Some A is not C
1
EOO'-1

Some B is A
Some C is B
All C is A
2,4,6
IIA-1

Some B is A
Some C is B
All A is C
2,6
IIA'-1

Some B is A
Some C is B
Some C is A
2,4
III-1

Some B is A
Some C is B
Some A is C
2
III'-1

Some B is A
Some C is B
No C is A
2,4,6,5'
IIE-1

Some B is A
Some C is B
No A is C
2,6,5'
IIE'-1

Some B is A
Some C is B
Some C is not A
2,4,5'
IIO-1

Some B is A
Some C is B
Some A is not C
2,5'
IIO'-1

Some B is A	Some B is A
All C is B	All C is B
All C is A	All A is C
4,6	6
IAA-1	IAA'-1

Some B is A	Some B is A
All C is B	All C is B
Some C is A	Some A is C
4	
IAI-1	IAI'-1

Some B is A	Some B is A
All C is B	All C is B
No C is A	No A is C
4,6,5'	6,5'
IAE-1	IAE'-1

Some B is A	Some B is A
All C is B	All C is B
Some C is not A	Some A is not C
4,5'	5'
IAO-1	IAO'-1

Some B is A	Some B is A
No C is B	No C is B
All C is A	All A is C
3,4,5,6	5,6
IEA-1	IEA'-1

Some B is A	Some B is A
No C is B	No C is B
Some C is A	Some A is C
3,4,5	5
IEI-1	IEI'-1

Some B is A	Some B is A
No C is B	No C is B
No C is A	No A is C
3,4,6	6
IEE-1	IEE'-1

Some B is A	Some B is A
No C is B	No C is B
Some C is not A	Some A is not C
3,4	
IEO-1	IEO'-1. Valid.

Some B is A
Some C is not B
All C is A
2,3,4,5,6
IOA-1

Some B is A
Some C is not B
All A is C
2,5,6
IOA'-1

Some B is A
Some C is not B
No C is A
2,3,4,6
IOE-1

Some B is A
Some C is not B
No A is C
2,6
IOE'-1

Some B is A
Some C is not B
Some C is A
2,3,4,5
IOI-1

Some B is A
Some C is not B
Some A is C
2,5
IOI'-1

Some B is A
Some C is not B
Some C is not A
2,3,4
IOO-1

Some B is A
Some C is not B
Some A is not C
2
IOO'-1

Some B is not A
Some C is not B
All C is A
1,2,3,4,5,6
OOA-1

Some B is not A
Some C is not B
All A is C
1,2,5,6
OOA'-1

Some B is not A
Some C is not B
No C is A
1,2,3,4,6
OEE-1

Some B is not A
Some C is not B
No A is C
1,2,6
OEE'-1

Some B is not A
Some C is not B
Some C is not A
1,2,3,4
OOO-1

Some B is not A
Some C is not B
Some A is not C
1,2
OOO'-1

Some B is not A
Some C is not B
Some C is A
1,2,3,4,5
OOI-1

Some B is not A
Some C is not B
Some A is C
1,2,5
OOI'-1

Some B is not A
All C is B
All C is A
4,5,6
OAA-1

Some B is not A
All C is B
All A is C
5,6
OAA'-1

Some B is not A
All C is B
No C is A
4,6
OAE-1

Some B is not A
All C is B
No A is C
6
OAE'-1

Some B is not A
All C is B
Some C is not A
4
OAO-1

Some B is not A
All C is B
Some A is not C

OAO'-1

Some B is not A
All C is B
Some C is A
4,5
OAI-1

Some B is not A
All C is B
Some A is C
5
OAI'-1

Some B is not A	Some B is not A
Some C is B	Some C is B
All C is A	All A is C
2,4,5,6	2,5,6
OIA-1	OIA'-1
Some B is not A	Some B is not A
Some C is B	Some C is B
No C is A	No A is C
2,4,6	2,6
OIE-1	OIE'-1
Some B is not A	Some B is not A
Some C is B	Some C is B
Some C is A	Some A is C
2,4,5	2,5
OII-1	OII'-1
Some B is not A	Some B is not A
Some C is B	Some C is B
Some C is not A	Some A is not C
2,4	2
OIO-1	OIO'-1

Some B is not A	Some B is not A
No C is B	No C is B
All C is A	All A is C
1,3,4,5,6	1,5,6
OEA-1	OEA'-1

Some B is not A	Some B is not A
No C is B	No C is B
No C is A	No A is C
1,3,4,6	1,6
OEE-1	OEE'-1

Some B is not A	Some B is not A
No C is B	No C is B
Some C is A	Some A is C
1,3,4,5	1,5
OEI-1	OEI'-1

Some B is not A	Some B is not A
No C is B	No C is B
Some C is not A	Some C is not A
1,3,4	1
OEO-1	OEO'-1

All A is B	All A is B
All B is C	All B is C
All C is A	All A is C
AAA-1'	AAA'-1'. Valid.
All A is B	All A is B
All B is C	All B is C
Some C is A	Some A is C
AAI-1'. Valid.	AAI'-1'. Valid.
All A is B	All A is B
All B is C	All B is C
No C is A	No A is C
5'	5'
AAE-1'	AAE'-1'
All A is B	All A is B
All B is C	All B is C
Some C is not A	Some A is not C
5'	5'
AAO-1'	AAO'-1'

All A is B	All A is B
No B is C	No B is C
All C is A	All A is C
3,5	5
AEA-1'	AEA'-1'
All A is B	All A is B
No B is C	No B is C
Some C is A	Some A is C
3,5	5
AEI-1'	AEI'-1'
All A is B	All A is B
No B is C	No B is C
No C is A	No A is C
3	
AEE-1'. Valid.	AEE'-1'. Valid.
All A is B	All A is B
No B is C	No B is C
Some C is not A	Some A is not C
3	
AEO-1'. Valid.	AEO'-1'. Valid.

All A is B	All A is B
Some B is C	Some B is C
All C is A	All A is C
6	6
AIA-1'	AIA'-1'
All A is B	All A is B
Some B is C	Some B is C
No C is A	No A is C
6,5'	6,5'
AIE-1'	AIE'-1'
All A is B	All A is B
Some B is C	Some B is C
Some C is A	Some A is C
AII-1'	AII'-1'
All A is B	All A is B
Some B is C	Some B is C
Some C is not A	Some A is not C
5'	5'
AIO-1'	AIO'-1'

All A is B
Some B is not C
All C is A
3,5,6
AOA-1'

All A is B
Some B is not C
All A is C
5,6
AOA'-1'

All A is B
Some B is not C
No C is A
3,6
AOE-1'

All A is B
Some B is not C
No A is C
6
AOE'-1'

All A is B
Some B is not C
Some C is A
3,5
AOI-1'

All A is B
Some B is not C
Some A is C
5
AOI'-1'

All A is B
Some B is not C
Some C is not A
3
AOO-1'

All A is B
Some B is not C
Some C is not A

AOO'-1'

No A is B
No B is C
No C is A
1,3
EEE-1'

No A is B
No B is C
No A is C
1
EEE'-1'

No A is B
No B is C
Some C is A
1,3,5
EEI-1'

No A is B
No B is C
Some A is C
1,5
EEI'-1'

No A is B
No B is C
All C is A
1,3,5
EEA-1'

No A is B
No B is C
All A is C
1,5
EEA'-1'

No A is B
No B is C
Some C is not A
1,3
EEO-1'

No A is B
No B is C
Some A is not C
1
EEO'-1'

No A is B
All B is C
No C is A

EAE-1'

No A is B
All B is C
No A is C

EAE'-1'

No A is B
All B is C
Some C is A
5
EAI-1'

No A is B
All B is C
Some A is C
5
EAI'-1'

No A is B
All B is C
All C is A
5
EAA-1'

No A is B
All B is C
All A is C
5
EAA'-1'

No A is B
All B is C
Some C is not A

EAO-1'. Valid.

No A is B
All B is C
Some A is not C

EAO'-1'

No A is B
Some B is C
No C is A
6
EIE-1'

No A is B
Some B is C
No A is C
6
EIE'-1'

No A is B
Some B is C
Some C is A
5
EII-1'

No A is B
Some B is C
Some A is C
5
EII'-1'

No A is B
Some B is C
All C is A
5,6
EIA-1'

No A is B
Some B is C
All A is C
5,6
EIA'-1'

No A is B
Some B is C
Some C is not A

EIO-1'. Valid.

No A is B
Some B is C
Some A is not C

EIO'-1'

No A is B
Some B is not C
No C is A
1,3,6
EOE-1'

No A is B
Some B is not C
No A is C
1,6
EOE'-1'

No A is B
Some B is not C
Some C is A
1,3,5
EOI-1'

No A is B
Some B is not C
Some A is C
1,5
EOI'-1'

No A is B
Some B is not C
All C is A
1,3,5,6
EOA-1'

No A is B
Some B is not C
All A is C
1,5,6
EOA'-1'

No A is B
Some B is not C
Some C is not A
1,3
EOO-1'

No A is B
Some B is not C
Some A is not C
1
EOO'-1'

Some A is B	Some A is B
Some B is C	Some B is C
All C is A	All A is C
2,4,6	2,6
IIA-1'	IIA'-1'

Some A is B	Some A is B
Some B is C	Some B is C
Some C is A	Some A is C
2,4	2
III-1'	III'-1'

Some A is B	Some A is B
Some B is C	Some B is C
No C is A	No A is C
2,4,6,5'	2,6,5'
IIE-1'	IIE'-1'

Some A is B	Some A is B
Some B is C	Some B is C
Some C is not A	Some A is not C
2,4,5'	2,5'
IIO-1'	IIO'-1'

Some A is B	Some A is B
All B is C	All B is C
All C is A	All A is C
4,6	6
IAA-1'	IAA'-1'
Some A is B	Some A is B
All B is C	All B is C
Some C is A	Some A is C
4	
IAI-1'. Valid.	IAI'-1'. Valid.
Some A is B	Some A is B
All B is C	All B is C
No C is A	No A is C
4,6,5'	6,5'
IAE-1'	IAE'-1'
Some A is B	Some A is B
All B is C	All B is C
Some C is not A	Some A is not C
4,5'	5'
IAO-1'	IAO'-1'

Some A is B
No B is C
All C is A
3,4,5,6
IEA-1'

Some A is B
No B is C
All A is C
5,6
IEA'-1'

Some A is B
No B is C
Some C is A
3,4,5
IEI-1'

Some A is B
No B is C
Some A is C
5
IEI'-1'

Some A is B
No B is C
No C is A
3,4,6
IEE-1'

Some A is B
No B is C
No A is C
6
IEE'-1'

Some A is B
No B is C
Some C is not A
3,4
IEO-1'

Some A is B
No B is C
Some A is not C

IEO'-1'. Valid.

Some A is B
Some B is not C
All C is A
2,3,4,5,6
IOA-1'

Some A is B
Some B is not C
All A is C
2,5,6
IOA'-1'

Some A is B
Some B is not C
Some C is A
2,3,4,5
IOI-1'

Some A is B
Some B is not C
Some A is C
2,5
IOI'-1'

Some A is B
Some B is not C
No C is A
2,3,4,6
IOE-1'

Some A is B
Some B is not C
No A is C
2,6
IOE'-1'

Some A is B
Some B is not C
Some C is not A
2,3,4
IOO-1'

Some A is B
Some B is not C
Some A is not C
2
IOO'-1'

Some A is not B
Some B is not C
All C is A
1,2,3,4,5,6
OOA-1'

Some A is not B
Some B is not C
All A is C
1,2,5,6
OOA'-1'

Some A is not B
Some B is not C
No C is A
1,2,3,4,6
OOE-1'

Some A is not B
Some B is not C
No A is C
1,2,6
OOE'-1'

Some A is not B
Some B is not C
Some C is A
1,2,3,4,5
OOI-1'

Some A is not B
Some B is not C
Some A is C
1,2,5
OOI'-1'

Some A is not B
Some B is not C
Some C is not A
1,2,3,4
OOO-1'

Some A is not B
Some B is not C
Some A is not C
1,2
OOO'-1'

Some A is not B
All B is C
All C is A
4,5,6
OAA-1'

Some A is not B
All B is C
All A is C
5,6
OAA'-1'

Some A is not B
All B is C
No C is A
4,6
OAE-1'

Some A is not B
All B is C
No A is C
6
OAE'-1'

Some A is not B
All B is C
Some C is A
4,5
OAI-1'

Some A is not B
All B is C
Some A is C
5
OAI'-1'

Some A is not B
All B is C
Some C is not A
4
OAO-1'

Some A is not B
All B is C
Some A is not C

OAO'-1'

Some A is not B
Some B is C
All C is A
2,4,5,6
OIA-1'

Some A is not B
Some B is C
All A is C
2,5,6
OIA'-1'

Some A is not B
Some B is C
No C is A
2,4,6
OIE-1'

Some A is not B
Some B is C
No A is C
2,6
OIE'-1'

Some A is not B
Some B is C
Some C is A
2,4,5
OII-1'

Some A is not B
Some B is C
Some A is C
2,5
OII'-1'

Some A is not B
Some B is C
Some C is not A
2,4
OIO-1'

Some A is not B
Some B is C
Some A is not C
2
OIO'-1'

Some A is not B	Some A is not B
No B is C	No B is C
All C is A	All A is C
1,3,4,5,6	1,5,6
OEA-1'	OEA'-1'
Some A is not B	Some A is not B
No B is C	No B is C
No C is A	No A is C
1,3,4,6	1,6
OEE-1'	OEE'-1'
Some A is not B	Some A is not B
No B is C	No B is C
Some C is A	Some A is C
1,3,4,5	1,5
OEI-1'	OEI'-1'
Some A is not B	Some A is not B
No B is C	No B is C
Some C is not A	Some A is not C
1,3,4	1
OEO-1'	OEO'-1'

All A are B
All C are B
All C are A
F
AAA-2

All A are B
All C are B
All A are C
F
AAA'-2

All A are B
All C are B
Some C are A
F
AAI-2

All A are B
All C are B
Some A are C
F
AAI'-2

All A are B
All C are B
No C are A
5', F
AAE-2

All A are B
All C are B
No A are C
5', F
AAE'-2

All A are B
All C are B
Some C are not A
5', F
AAO-2

All A are B
All C are B
Some A are not C
5', F
AAO'-2

All A are B	All A are B
No C are B	No C are B
All C are A	All A are C
5	5
AEA-2	AEA'-2
All A are B	All A are B
No C are B	No C are B
No C are A	No A are C
AEE-2. Valid.	AEE'-2. Valid.
All A are B	All A are B
No C are B	No C are B
Some C are A	Some A are C
5	5
AEI-2	AEI'-2
All A are B	All A are B
No C are B	No C are B
Some C are not A	Some A are not C
AEO-2. Valid.	AEO'-2. Valid.

All A are B
Some C are B
All C are A
6,F
AIA-2

All A are B
Some C are B
All A are C
6,F
AIA'-2

All A are B
Some C are B
No C are A
6,5', F
AIE-2

All A are B
Some C are B
No A are C
6,5',F
AIE'-2

All A are B
Some C are B
Some C are A
F
AII-2

All A are B
Some C are B
Some A are C
F
AII'-2

All A are B
Some C are B
Some C are not A
5',F
AIO-2

All A are B
Some C are B
Some A are not C
5',F
AIO'-2

All A are B	All A are B
Some C are not B	Some C are not B
All C are A	All A are C
5,6	5,6
AOA-2	AOA'-2

All A are B	All A are B
Some C are not B	Some C are not B
No C are A	No A are C
6	6
AOE-2	AOE'-2

All A are B	All A are B
Some C are not B	Some C are not B
Some C are A	Some A are C
5	5
AOI-2	AOI'-2

All A are B	All A are B
Some C are not B	Some C are not B
Some C are not A	Some A are not C
AOO-2. Valid.	AOO'-2

No A are B	No A are B
No C are B	No C are B
No C are A	No A are C
1	1
EEE-2	EEE'-2

No A are B	No A are B
No C are B	No C are B
Some C are A	Some A are C
1,5	1,5
EEI-2	EEI'-2

No A are B	No A are B
No C are B	No C are B
No C are A	All A are C
1,5	1,5
EEA-2	EEA'-2

No A are B	No A are B
No C are B	No C are B
Some C are not A	Some A are not C
1	1
EEO-2	EEO'-2

No A are B	No A are B
All C are B	All C are B
No C are A	No A are C
EAE-2. Valid.	EAE'-2. Valid.
No A are B	No A are B
All C are B	All C are B
Some C are A	Some A are C
5	5
EAI-2	EAI'-2
No A are B	No A are B
All C are B	All C are B
All C are A	All A are C
5	5
EAA-2	EAA'-2
No A are B	No A are B
All C are B	All C are B
Some C are not A	Some A are not C
EAO-2. Valid.	EAO'-2. Valid.

No A are B	No A are B
Some C are B	Some C are B
No C are A	No A are C
6	6
EIE-2	EIE'-2
No A are B	No A are B
Some C are B	Some C are B
Some C are A	Some A are C
5	5
EII-2	EII'-2
No A are B	No A are B
Some C are B	Some C are B
All C are A	All A are C
5,6	5,6
EIA-2	EIA'-2
No A are B	No A are B
Some C are B	Some C are B
Some C are not A	Some A are not C
EIO-2. Valid.	EIO'-2

No A are B	No A are B
Some C are not B	Some C are not B
No C are A	No A are C
1,6	1,6
EOE-2	EOE'-2

No A are B	No A are B
Some C are not B	Some C are not B
Some C are A	Some A are C
1,5	1,5
EOI-2	EOI'-2

No A are B	No A are B
Some C are not B	Some C is not B
All C are A	All A are C
1,5,6	1,5,6
EOA-2	EOA'-2

No A are B	No A are B
Some C is not B	Some C is not B
Some C is not A	Some A is not C
1	1
EOO-2	EOO'-2

Some A are B
Some C are B
All C are A
2,4,6,F
IIA-2

Some A are B
Some C are B
All A are C
2,4,6,F
IIA'-2

Some A are B
Some C are B
Some C are A
2,4,F
III-2

Some A are B
Some C are B
Some A are C
2,4,F
III'-2

Some A are B
Some C are B
No C are A
2,4,5',6,F
IIE-2

Some A are B
Some C are B
No A are C
2,4,5',6,F
IIE'-2

Some A are B
Some C are B
Some C are not A
2,4,5',F
IIO-2

Some A are B
Some C are B
Some A are not C
2,4,5',F
IIO'-2

Some A are B
All C are B
All C are A
4,6,F
IAA-2

Some A are B
All C are B
All A are C
4,6,F
IAA'-2

Some A are B
All C are B
Some C are A
4,F
IAI-2

Some A are B
All C are B
Some A are C
4,F
IAI'-2

Some A are B
All C are B
No C are A
4,5',6,F
IAE-2

Some A are B
All C are B
No A are C
4,5',6,F
IAE'-2

Some A are B
All C are B
Some C are not A
4,5',F
IAO-2

Some A are B
All C are B
Some A are not C
4,5',F
IAO'-2

Some A are B
No C are B
All C are A
4,5,6
IEA-2

Some A are B
No C are B
All A are C
4,5,6
IEA'-2

Some A are B
No C are B
Some C are A
4,5
IEI-2

Some A are B
No C are B
Some A are C
4,5
IEI'-2

Some A are B
No C are B
No C are A
4,6
IEE-2

Some A are B
No C are B
No A are C
4,6
IEE'-2

Some A are B
No C are B
Some C are not A
4
IEO-2

Some A are B
No C are B
Some A are not C
4
IEO'-2. Valid.

Some A are B
Some C are not B
All C are A
2,4,5,6
IOA-2

Some A are B
Some C are not B
All A are C
2,4,5,6
IOA'-2

Some A are B
Some C are not B
No C are A
2,4,6
IOE-2

Some A are B
Some C are not B
No A are C
2,4,6
IOE'-2

Some A are B
Some C are not B
Some C are A
2,4,5
IOI-2

Some A are B
Some C are not B
Some A are C
2,4,5
IOI'-2

Some A are B
Some C are not B
Some C are not A
2,4
IOO-2

Some A are B
Some C are not B
Some A are not C
2,4
IOO'-2

Some A is not B
Some C is not B
All C is A
1,2,4,5,6
OOA-2

Some A is not B
Some C is not B
All A is C
1,2,4,5,6
OAA'-2

Some A is not B
Some C is not B
No C is A
1,2,4,6
OOE-2

Some A is not B
Some C is not B
No A is C
1,2,4,6
OOE'-2

Some A is not B
Some C is not B
Some C is not A
1,2,4
OOO-2

Some A is not B
Some C is not B
Some A is not C
1,2,4
OOO'-2

Some A is not B
Some C is not B
Some C is A
1,2,4,5
OOI-2

Some A is not B
Some C is not B
Some A is not C
1,2,4,5
OOI'-2

Some A is not B
All C is B
All C is A
4,5,6
OAA-2

Some A is not B
All C is B
All A is C
4,5,6
OAA'-2

Some A is not B
All C is B
No C is A
4,6
OAE-2

Some A is not B
All C is B
No A is C
4,6
OAE'-2

Some A is not B
All C is B
Some C is not A
4
OAO-2

Some A is not B
All C is B
Some A is not C
4
OAO'-2. Valid.

Some A is not B
All C is B
Some C is A
4,5
OAI-2

Some A is not B
All C is B
Some A is C
4,5
OAI'-2

Some A is not B	Some A is not B
Some C is B	Some C is B
All C is A	All A is C
2,4,5,6	2,4,5,6
OIA-2	OIA'-2

Some A is not B	Some A is not B
Some C is B	Some C is B
No C is A	No A is C
2,4,6	2,4,6
OIE-2	OIE'-2

Some A is not B	Some A is not B
Some C is B	Some C is B
Some C is A	Some A is C
2,4,5	2,4,5
OII-2	OII'-2

Some A is not B	Some A is not B
Some C is B	Some C is B
Some C is not A	Some A is not C
2,4	2,4
OIO-2	OIO'-2

Some A is not B No C is B All C is A 1,4,5,6 OEA-2	Some A is not B No C is B All A is C 1,4,5,6 OEA'-2
Some A is not B No C is B No C is A 1,4,6 OEE-2	Some A is not B No C is B No A is C 1,4,6 OEE'-2
Some A is not B No C is B Some C is A 1,4,5 OEI-2	Some A is not B No C is B Some A is C 1,4,5 OEI'-2
Some A is not B No C is B Some C is not A 1,4 OEO-2	Some A is not B No C is B Some A is not C 1,4 OEO'-2

All B is A	All B is A
All B is C	All B is C
All C is A	All A is C
G	G
AAA-3	AAA'-3
All B is A	All B is A
All B is C	All B is C
Some C is A	Some A is C
AAI-3. Valid.	AAI'-3. Valid.
All B is A	All B is A
All B is C	All B is C
No C is A	No A is C
5',G	5',G
AAE-3	AAE'-3
All B is A	All B is A
All B is C	All B is C
Some C is not A	Some A is not C
5'	5'
AAO-3	AAO'-3

All B is A
No B is C
All C is A
3,5,G
AEA-3

All B is A
No B is C
All A is C
3,5,G
AEA'-3

All B is A
No B is C
No C is A
3,G
AEE-3

All B is A
No B is C
No A is C
3,G
AEE'-3

All B is A
No B is C
Some C is A
3,5
AEI-3

All B is A
No B is C
Some A is C
3,5
AEI'-3

All B is A
No B is C
Some C is not A
3
AEO-3

All B is A
No B is C
Some A is not C
3
AEO'-3. Valid.

All B is A	All B is A
Some B is C	Some B is C
All C is A	All A is C
6,G	6,G
AIA-3	AIA'-3
All B is A	All B is A
Some B is C	Some B is C
No C is A	No A is C
6,5',G	6,5',G
AIE-3	AIE'-3
All B is A	All B is A
Some B is C	Some B is C
Some C is A	Some A is C
AII-3. Valid.	AII'-3. Valid.
All B is A	All B is A
Some B is C	Some B is C
Some C is not A	Some A is not C
5'	5'
AIO-3	AIO'-3

All B is A
Some B is not C
All C is A
3,5,6,G
AOA-3

All B is A
Some B is not C
All A is C
3,5,6,G
AOA'-3

All B is A
Some B is not C
No C is A
3,6,G
AOE-3

All B is A
Some B is not C
No A is C
3,6,G
AOE'-3

All B is A
Some B is not C
Some C is A
3,5
AOI-3

All B is A
Some B is not C
Some A is C
3,5
AOI'-3

All B is A
Some B is not C
Some C is not A
3
AOO-3

All B is A
Some B is not C
Some A is not C
3
AOO'-3. Valid.

No B is A
No B is C
No C is A
1,3,G
EEE-3

No B is A
No B is C
No A is C
1,3,G
EEE'-3

No B is A
No B is C
Some C is A
1,3,5
EEI-3

No B is A
No B is C
Some A is C
1,3,5
EEI'-3

No B is A
No B is C
All C is A
1,3,5,G
EEA-3

No B is A
No B is C
All A is C
1,3,5,G
EEA'-3

No B is A
No B is C
All A is C
1,3
EEO-3

No B is A
No B is C
Some A is not C
1,3
EEO'-3

No B is A	No B is A
All B is C	All B is C
No C is A	No A is C
G	G
EAE-3	EAE'-3

No B is A	No B is A
All B is C	All B is C
Some C is A	Some A is C
5	5
EAI-3	EAI'-3

No B is A	No B is A
All B is C	All B is C
All C is A	All C is A
5,G	5,G
EAA-3	EAA'-3

No B is A	No B is A
All B is C	All B is C
Some C is not A	Some A is not C
EAO-3. Valid.	EAO'-3

No B is A
Some B is C
No C is A
6,G
EIE-3

No B is A
Some B is C
No A is C
6,G
EIE'-3

No B is A
Some B is C
Some C is A
5
EII-3

No B is A
Some B is C
Some A is C
5
EII'-3

No B is A
Some B is C
All C is A
5,6,G
EIA-3

No B is A
Some B is C
All A is C
5,6,G
EIA'-3

No B is A
Some B is C
Some C is not A

EIO-3. Valid.

No B is A
Some B is C
Some A is not C

EIO'-3

No B is A
Some B is not C
No C is A
1,3,6,G
EOE-3

No B is A
Some B is not C
No A is C
1,3,6,G
EOE'-3

No B is A
Some B is not C
Some C is A
1,3,5
EOI-3

No B is A
Some B is not C
Some A is C
1,3,5
EOI'-3

No B is A
Some B is not C
All C is A
1,3,5,6,G
EOA-3

No B is A
Some B is not C
All A is C
1,3,5,6,G
EOA'-3

No B is A
Some B is not C
Some C is not A
1,3
EOO-3

No B is A
Some B is not C
Some A is not C
1,3
EOO'-3

Some B is A
Some B is C
All C is A
2,6,G
IIA-3

Some B is A
Some B is C
All A is C
2,6,G
IIA'-3

Some B is A
Some B is C
Some C is A
2
III-3

Some B is A
Some B is C
Some A is C
2
III'-3

Some B is A
Some B is C
No C is A
2,6,5',G
IIE-3

Some B is A
Some B is C
No A is C
2,6,5',G
IIE'-3

Some B is A
Some B is C
Some C is not A
2,5'
IIO-3

Some B is A
Some B is C
Some A is not C
2,5'
IIO'-3

Some B is A	Some B is A
All B is C	All B is C
All C is A	All A is C
6,G	6,G
IAA-3	IAA'-3
Some B is A	Some B is A
All B is C	All B is C
Some C is A	Some A is C
IAI-3. Valid.	IAI'-3. Valid.
Some B is A	Some B is A
All B is C	All B is C
No C is A	No A is C
6,5',G	6,5',G
IAE-3	IAE'-3
Some B is A	Some B is A
All B is C	All B is C
Some C is not A	Some A is not C
5'	5'
IAO-3	IAO'-3

Some B is A
No B is C
All C is A
3,5,6,G
IEA-3

Some B is A
No B is C
All A is C
3,5,6,G
IEA'-3

Some B is A
No B is C
Some C is A
3,5
IEI-3

Some B is A
No B is C
Some A is C
3,5
IEI'-3

Some B is A
No B is C
No C is A
3,6,G
IEE-3

Some B is A
No B is C
No A is C
3,6,G
IEE'-3

Some B is A
No B is C
Some C is not A
3
IEO-3

Some B is A
No B is C
Some A is not C
3
IEO'-3. Valid.

Some B is A Some B is not C All C is A 2,3,5,6,G IOA-3	Some B is A Some B is not C All A is C 2,3,5,6,G IOA'-3
Some B is A Some B is not C No C is A 2,3,6,G IOE-3	Some B is A Some B is not C No A is C 2,3,6,G IOE'-3
Some B is A Some B is not C Some C is A 2,3,5 IOI-3	Some B is A Some B is not C Some A is C 2,3,5 IOI'-3
Some B is A Some B is not C Some C is not A 2,3 IOO-3	Some B is A Some B is not C Some A is not C 2,3 IOO'-3

Some B is not A
Some B is not C
All C is A
1,2,3,5,6,G
OOA-3

Some B is not A
Some B is not C
All A is C
1,2,3,5,6,G
OOA'-3

Some B is not A
Some B is not C
No C is A
1,2,3,6,G
OOE-3

Some B is not A
Some B is not C
No A is C
1,2,3,6,G
OOE'-3

Some B is not A
Some B is not C
Some C is not A
1,2,3
OOO-3

Some B is not A
Some B is not C
Some A is not C
1,2,3
OOO'-3

Some B is not A
Some B is not C
Some C is A
1,2,3,5
OOI-3

Some B is not A
Some B is not C
Some A is C
1,2,3,5
OOI'-3

Some B is not A
All B is C
All C is A
5,6,G
OAA-3

Some B is not A
All B is C
All A is C
5,6,G
OAA'-3

Some B is not A
All B is C
No C is A
6,G
OAE-3

Some B is not A
All B is C
No A is C
6,G
OAE'-3

Some B is not A
All B is C
Some C is not A

OAO-3. Valid.

Some B is not A
All B is C
Some A is not C

OAO'-3

Some B is not A
All B is C
Some C is A
5
OAI-3

Some B is not A
All B is C
Some A is C
5
OAI'-3

Some B is not A
Some B is C
All C is A
2,5,6,G
OIA-3

Some B is not A
Some B is C
All A is C
2,5,6,G
OIA'-3

Some B is not A
Some B is C
No C is A
2,6,G
OIE-3

Some B is not A
Some B is C
No A is C
2,6,G
OIE'-3

Some B is not A
Some B is C
Some C is A
2,5
OII-3

Some B is not A
Some B is C
Some A is C
2,5
OII'-3

Some B is not A
Some B is C
Some C is not A
2
OIO-3

Some B is not A
Some B is C
Some A is not C
2
OIO'-3

Some B is not A	Some B is not A
No B is C	No B is C
All C is A	All A is C
1,3,5,6,G	1,3,5,6,G
OEA-3	OEA'-3

Some B is not A	Some B is not A
No B is C	No B is C
No C is A	No A is C
1,3,6,G	1,3,6,G
OEE-3	OEE'-3

Some B is not A	Some B is not A
No B is C	No B is C
Some C is A	Some A is C
1,3,5	1,3,5
OEI-3	OEI'-3

Some B is not A	Some B is not A
No B is C	No B is C
Some C is not A	Some A is not C
1,3	1,3
OEO-3	OEO'-3

Rules 1, 2, 3, 4, 5 and 6 are all explicitly stated in the Summa. Applying them to the 512 possible moods, they invalidate 414 and leave 98 valid. In the direct first figure they invalidate 103 of the 128 possible moods, leaving 25 valid, of which only 12 should be valid. Hence these rules fail to invalidate 13 moods in this figure which should be invalid. In the second figure they invalidate 104 of the 128 possible moods, leaving 24 as valid. Rule 4, however, invalidates two valid moods, IEO'-2 and OAO'-2. Thus, of the 24 moods left valid by these rules, 10 should be valid and the other 14 should be invalid. In the third figure they invalidate 104 of the 128 possible moods, leaving 24 valid. Rule 3, however, invalidates three valid moods, IEO'-3, AEO'-3 and AOO'-3. Thus of the 24 moods left valid by these rules, only 9 should be valid and the other 15 should be invalid. In the indirect first figure they invalidate 103 of the 128 possible moods, leaving 25 as valid. But rule 3 invalidates two valid moods, AEE-1' and AEO-1', and rule 4 invalidates one valid mood, IAI-1'. Thus, of the 25 moods left valid by these rules, only 9 should be valid and the other 16 should be invalid. Therefore, the first six rules, that is, those rules explicitly stated by the author of the Summa, are not adequate for distinguishing valid from invalid syllogisms. Of the 414 moods which they invalidate, 8 should be valid. Of the 98 moods which they leave valid, only 40 should be valid and the other 58 should be invalid.

By adding rule 5' to the rules of the Summa, an additional 28 moods are invalidated, all of which should be invalid, and only 30 moods are then left as valid which should be invalid. All of these 30 moods violate a rule of distribution.

Rules A, B, C, D, J, J' and E of the Summulae yield the same results as rules 1, 2, 3, 4, 5, 5' and 6 of the Summa. Rule F invalidates 6 more of the 30 moods that should be invalid, leaving 24 still valid which should be invalid. Rule G invalidates another 4 moods of the 24 remaining moods which should be invalid, leaving a total of 20 as valid which should be invalid. Thus, the rules of the Summulae also are inadequate for distinguishing valid from invalid syllogisms.

Summarizing this part of my investigation, rules 1, 2, 3, 4, 5, 5' and 6 of the Summa invalidate 442 moods, 8 of which are valid, and they leave 70 moods valid, of which only 40 should be valid and the other 30 should be invalid. Rules A, B, C, D, J, J', E, F and G of the Summulae invalidate 452 moods, 8 of which should be valid, and they leave 60 moods valid, of which only 40 should be valid and the other 20 should be invalid.

Now I shall turn to the moods recognized as valid by the authors, either explicitly or by a rule of validation. The author of the Summa presents and proves through the two Dicta four valid moods in the first figure, AAA-1, EAE-1, AII-1 and EIO-1.[40] In the second figure he presents and proves four valid moods, EAE-2, AEE-2, EIO-2 and AOO-2, using the two Dicta and the third principle.[41] In the third figure he presents and proves six valid moods, AAI-3, EAO-3, IAI-3, AII-3, OAO-3 and EIO-3, using the two Dicta and the third principle.[42] This gives a total of 14 valid moods, all concluding directly. He also states that there are ten valid moods which conclude indirectly, five in the first figure, two in the second figure and three in the third figure. Of these, he presents and proves only the five in the first figure, AAI'-1, EAE'-1, AII'-1, AEO'-1 and IEO'-1.[43] Hence, he presents and proves a total of nineteen valid syllogisms. Petrus Hispanus presents the same nineteen valid moods.[44]

In the modern presentation of the syllogistic, such as that of Bocheński, there are 256 possible moods and of these only 24 are valid.[45] In the systems of the Summa and the Summulae there are 512 possible moods and of these only 48 are valid. While the systems of the Summa and the Summulae have twice as many moods, each of the extra moods is a doublet of one of the first 256 moods. Each mood concluding indirectly is a doublet of one concluding directly with the order of its premisses reversed. While the Summa and the Summulae present only 19 valid moods, they should have presented 48. I have listed below the 48 valid moods in pairs, showing the moods concluding directly and their indirectly concluding doublets. Those marked with an * are the nineteen moods presented in the Summa and the Summulae. The moods marked by □ are invalid by the rules of the Summa and the Summulae. The moods marked by φ are subaltern moods and are validated by rule φ.

AAA-1*	AAA'-1'
AAI-1φ	AAI'-1'φ
AAI'-1*	AAI-1'
AII-1*	IAI'-1'
AII'-1*	IAI-1'□
EAE-1*	AEE'-1'
EAE'-1*	AEE-1'□
EAO-1φ	AEO'-1'φ
EAO'-1φ	AEO-1'□φ
AEO'-1*	EAO-1'
EIO-1*	IEO'-1'
IEO'-1*	EIO-1'
EAE-2*	AEE'-2
AEE-2*	EAE'-2
EIO-2*	IEO'-2□
AOO-2*	OAO'-2□
AEO-2φ	EAO'-2φ
EAO-2φ	AEO'-2φ
AAI-3*	AAI'-3
EAO-3*	AEO'-3□

IAI-3*	AII'-3
AII-3	IAI'-3
OAO-3*	AOO'-3□
EIO-3*	IEO'-3□

Summarizing this information, the authors of the Summa and the Summulae failed to list all the moods of the indirect first figure, the subaltern moods concluding directly, all the moods of the second and third figures concluding indirectly and a subaltern mood of an indirectly concluding mood in the direct first figure. Rule ψ of the Summa validates many moods, but it fails to handle moods concluding to a particular negative, which seem to violate the rule. Hence, I would deem this rule useless. Also rules H and I of the Summulae seem to be useless because one does not know how to apply them.

In conclusion, the rules presented in the Summa and in the Summulae are inadequate for distinguishing valid syllogisms from invalid ones. Furthermore, the lists of valid moods presented by both texts are incomplete. Hence, it appears that neither author was fully aware of the potentialities and the limitations of their formal systems. The main cause of their inadequacy was a lack of knowledge of the distribution of terms and its relation to valid syllogisms. The author of the Summa says nothing about distribution. Petrus Hispanus wrote about distribution in the twelfth treatise of the Summulae,[46] but he did not integrate his discussion.

The author of the Summa concerned himself primarily with presenting a summary of the logic of demonstration. He seemed to be unaware of the technical problems involved in his system and contented himself with a somewhat pedantic and uncritical presentation of what he thought to be the traditional teachings. He certainly does not represent the dominant trend of his century in which the logic of consequences replaced the syllogistic in logical priority and philosophical importance. In the next chapter I shall analyze the efforts which the author of the Summa made to insist on the logical priority of the syllogistic over the logic of consequences.

NOTES

[1] Parma, p. 54A.

[2] Petrus Hispanus, Summulae logicales, ed. I. M. Bocheński (Turin, 1947). I shall cite this book by "SL" and its paragraph numbers.

[3] SL, 5.06.

[4] Parma, p. 93B.

[5] Parma, p. 85B.

[6] Parma, p. 86B.

[7] Parma, p. 92A; infra, ch. VII.

[8] SL, 1.07-1.11.

[9] Parma, p. 88A.

[10] Aristotle, Categories, 10, 11b16.

[11] SL, 1.13-1.17.

[12] Parma, p. 89A.

[13] SL, 1.24-1.27. I have not been able to consult the manuscripts of the Summa to verify the verses in them.

[14] Parma, pp. 89B-90A.

[15] SL, 1.16-1.17.

[16] Parma, p. 90A; pp. 94-95.

[17] Parma, p. 93B.

[18] SL, 5.02-5.03.

[19] Parma, p. 93B.

[20] Aristotle, Prior Analytics, I, 1; 24b18.

[21] Parma, pp. 93B-94A.

[22] A. N. Prior, Formal Logic (Oxford, 1955), pp. 111-12.

[23] Parma, p. 94A.

[24] Parma, p. 94A.

[25] SL, 4.01; 4.12.

[26] Parma, pp. 94A,B-95A.

[27] Parma, p. 94B.

[28] SL, 1.18-1.21.

[29] Parma, pp. 108B-109A.

[30] Aristotle, De Interpretatione, 20a20-23; Prior Analytics, 52b4-9.

[31] Parma, pp. 96A-97A.

[32] Prior Analytics, Bk. I, chs. 4,5, and 6.

[33] SL, 4.02-4.04.

[34] I. M. Bocheński, A Precis of Mathematical Logic, trans. Otto Bird (Dordrecht, Holland, 1959).

[35] Bocheński, A History . . ., pp. 215,216.

[36] Parma, p. 97B.

[37] Parma, p. 100A.

[38] SL, 4.05-4.06; 4.10; 4.13; 4.16.

[39] Parma, p. 101A.

[40] Parma, p. 98A.

[41] Parma, pp. 98B-99A.

[42] Parma, p. 99.

[43] Parma, p. 100.

[44] SL, 4.07-4.17.

[45] A Precis . . ., pp. 37-42.

[46] SL, 12.01ff.

CHAPTER VI

THE SENTENTIAL LOGIC OF THE SUMMA TOTIUS LOGICAE ARISTOTELIS

As a faithful disciple of the Aristotelian tradition, the author of the Summa strongly upheld the position that all arguments are reducible to the syllogism, and, at the very time when this position is about to be reversed for sound logical reasons,[1] he attempted to work out the logical implications of this thesis. In this chapter I shall present a brief analysis of his development of the Aristotelian position on hypothetical enunciations and the inferences based upon them, discussing first the theory of truth conditions and then the theory of consequences.

Mediaeval logicians, including Petrus Hispanus and the author of the Summa, used the term "hypothetical enunciation" as a generic term designating enunciations which contain at least two categorical enunciations as their principal parts.[2] Among the species of hypothetical enunciations are conditional enunciations, disjunctive enunciations and conjunctive enunciations. The author of the Summa also mentions rational, causal and temporal enunciations as other species of the hypothetical enunciation, and he shows how these are immediately reducible to the conditional enunciation. According to the author of the Summa, there are two principal differences between the categorical enunciation and the hypothetical enunciation. The first difference is that the principal parts of the categorical enunciation are its terms, while the principal parts of the hypothetical enunciation are categorical enunciations and the remote parts of the hypothetical enunciation are the terms of its constituent categorical enunciations. The second difference is that in a categorical enunciation one principal part is predicated of the other, while in the hypothetical enunciation there is no such predication among the principal parts. The hypothetical enunciation simply states that something is or is not if something else has or has not been the case. This description of the hypothetical enunciation applies to the disjunctive enunciation as well as to the conditional enunciation, because the disjunctive enunciation can be reduced to the conditional enunciation. Since the conjunctive enunciation is the only species of the hypothetical enunciation which cannot be reduced to the conditional enunciation, the primary concern of the author is the conditional enunciation.

The author of the Summa discusses in detail the ways in which conditional enunciations may vary. Simple conditional enunciations have a categorical enunciation as antecedent and a categorical enunciation as consequent, and they may vary in either of two ways. The two categorical enunciations may have the same subject and different predicates, or they may have the same predicate and different subjects. In either case there is at least one term which appears in each of the two principal parts of a simple conditional. Composite conditional enunciations may have either of three forms. They may have a categorical enunciation as antecedent and a conditional enunciation as consequent, or they may have a conditional enunciation as antecedent and a categorical enunciation as consequent, or they may have a conditional enunciation as antecedent and a conditional enunciation as consequent. After noting that conditional enunciations may be composed of categorical enunciations with different subjects or with different predicates, but not with both different subjects and different predicates, the author considers only those conditional sentences composed of categorical enunciations whose subjects are the same and whose predicates are different. Composite conditional enunciations composed of a categorical enunciation and a conditional enunciation may have three different predicates, but those composed of two conditionals may not have four different predicates. They are restricted to three predicates, and one of the predicates must appear twice.

For determining the truth conditions of hypothetical enunciations, the author of the Summa cites two types of hypothesis from Ammonius.[3] The first is that if something impossible is assumed in the antecedent, then something else impossible necessarily follows in the consequent. From this the author infers that a conditional enunciation may be true even though both of its parts are false. The second type of hypothesis is that something is said to be or not to be if something else has been or has not been. From these types of hypothesis, and especially from the second, the author also infers that the truth of an hypothetical enunciation lies in the consequence of the terms in its consequent upon the terms in its antecedent. For instance, in the conditional, "If it is a man, it is an animal," "animal" follows necessarily from "man," for it is certain that whatever is a man is also an animal. From this the author infers that for a conditional enunciation to be true the antecedent can not be true unless the consequent is also true. If the antecedent can be true and the consequent false, then the conditional enunciation is false, because in this case there could be no necessary connection between the terms which appear in the antecedent and those which appear in the consequent. And from all these considerations the author draws the logical conclusion that every true conditional enunciation is necessary and every false conditional is impossible.

It is obvious that this theory of the truth conditions of the conditional enunciation is not equivalent to the truth-functional interpretation of the conditional sentence known today as the theory of material implication, nor is it an approximation to the theory of strict implication. The author has developed his theory of truth conditions in the context of the Aristotelian theory of the reduction of all arguments to the syllogism. In the syllogistic the validity of an inference depends on a connection among the terms of the propositions, and in the case of a demonstration this must be a necessary connection. Since the author of the Summa is primarily concerned with the logic of demonstration, he attempts to find the same justification for validity in the inferences involving hypothetical enunciations, and therefore he stresses the importance of terms in the parts of conditional enunciations. Implicit in all his statements about truth conditions is the stipulation that a necessary or an impossible connection must exist among the terms which occur in the parts of the conditional enunciation. Thus for a conditional to be true the antecedent and the consequent must be so related that the antecedent cannot be true unless the consequent is also true, or if the antecedent is impossible then something impossible must be stated in the consequent. If such a necessary connection among the terms does not exist, then the conditional is false. A case not explicitly mentioned by the author is the situation in which the antecedent is false and the consequent is true. In such a case, however, no necessary or impossible connection could exist among the terms, and this conditional would be false. In the context of the author's stress upon the relations among the terms of the parts of conditional enunciations, it appears that no strictly formal analysis of his sentential logic is possible. In fact, the very formulation of a conditional enunciation would seem to require that one know the definitions of all the terms used in such enunciations. But the knowledge of definitions is, especially in the philosophy of the Summa, the end of scientific knowledge. Hence, it would seem that conditional enunciations would be of little value for the discovery of scientific knowledge.

When the author of the Summa first speaks about the disjunctive enunciation he states that it is true if one of its parts is true and the other false, or if what is assumed in one part is denied in the other, and that some disjunctive enunciations may be reduced to conditional ones.[4] For example, "Either he is healthy or he is ill" is equivalent to "If he is not healthy, he is ill." But "If he is white, he is not black" is not equivalent to "Either he is white or he is black." Here the author is simply imprecise, for later, when discussing how disjunctive enunciations function in arguments,[5] he correctly states that a disjunction of the form p V q is equivalent to a conditional which negates the disjunct taken as the antecedent and has the form -p → q. The reason which he gives for saying that not all disjunctions are equivalent to conditionals is that the conditional may be saved, that is, verified, in more kinds of matter than the disjunction. But this seems to be inconsistent with his interpretation of the conditional. For the disjunction to be true, its subject matter must be such that if one thing is assumed in one part of the disjunction it must be denied in the other part of the disjunction. This truth condition certainly holds for the excluded middle, and when the terms of the component categorical enunciations are related by necessity or impossibility, it is equivalent to the first condition which he stated, that one part must be true and the other part false. Now, since a disjunction of the form $p \vee q$ is equivalent to a conditional of the form $-p \rightarrow q$, the disjunction is saved, that is, verified, under exactly the same truth conditions as the corresponding conditional enunciation, and thus the difference which the author finds between them does not exist. For his conditional has the truth values 1001 and the disjunction has the values 0110, while a conditional of the form $-p \rightarrow q$ has the values 0110 and thus is equivalent to a disjunction of the form $p \vee q$. The truth-functional analysis of disjunction is not equivalent to the theory of disjunction of the Summa because of the non-formal conditions about the terms imposed by the Summa.

The conjunctive enunciation of the form $p \& q$ is true when both of its parts are true; otherwise it is false.[6] There is no condition attached to this enunciation, but the author imposes the stipulation that both of its parts be about similar things. Thus he considers conjunctions in a non-truth-functional manner because of his concern for terms.

This concern for terms is also present in his statement that the conjunction functions in syllogisms in the same way as the categorical enunciation. Perhaps he means that a conjunction which is useful in argumentation would be composed of two statements which could be used as propositions in a syllogism.

The author of the Summa has confused the theory of truth conditions of non-categorical enunciations with non-formal considerations about the definitions of the terms of their component categorical enunciations. His insistence upon following the Aristotelian tradition leads to a logic which requires a knowledge of the definitions of all the terms used and which thus depends on non-formal conditions for validity. Needless to say, such a logic is of dubious value in any circumstances and virtually useless as a logic of discovery.

The theory of truth conditions for hypothetical propositions in the Summulae logicales of Petrus Hispanus is similar in many respects to that of the Summa, but it is stated more briefly.[7] The conditional is true if the antecedent cannot be true and the consequent false. Every true conditional is necessary and every false conditional is impossible. Though Petrus Hispanus says nothing about the necessary connections among terms, such a consideration is required for his theory. The conjunction is true if both of its parts are true. The disjunction is true if either part is true and it is false if both parts are false. In a true disjunction both parts may be true, but this is not proper. This allowance for the distinction between inclusive and exclusive disjunction is the only major difference between the Summa and the Summulae. The Summulae are not as close to a truth-functional interpretation of the conditional as Mullally would lead one to believe.[8] The truth conditions of true and false conditional propositions are not different from those of the Summa, and thus they certainly do depend upon a knowledge of definitions of their terms.

The theory of consequences in the Summa suffers from the confusions present in the theory of truth conditions.[9] This makes it practically impossible to evaluate the inference schemes of the Summa in any strictly formal way which would accurately reflect the logic of the Summa. Within these limitations, however, every inference scheme of the Summa should be valid in the theory of material implication, at least by the addition of a premiss containing definitions of the terms involved or by the addition of a premiss which would have the same effect. In considering the inference schemes of the Summa one must keep in mind that the vulgate text, upon which my study is based, is rather corrupt and contains many inaccuracies, especially in the section now under consideration.

Inferences involving conditionals and disjunctions occur in figures and moods which result from variations in the positions of their terms and their affirmative and negative parts. Among simple conditionals there are the following variations of affirmative and negative parts:

$p \rightarrow q \qquad p \rightarrow -q \qquad -p \rightarrow q \qquad -p \rightarrow -q$.[10]

These constitute the four moods of simple conditionals, and their component categorical enunciations have the same subjects and related predicates. Since valid inferences can result from an affirmation of the antecedent or a denial of the consequent, these two types of inference schemes constitute the two figures in which conditional syllogisms can occur, and each of the four moods occurs in each of the two figures.

In my analysis of the validity of the inference schemes of the Summa I will continue to use contemporary symbolic logic as the metascience in which I will evaluate the sentential logic of the Summa, and I will evaluate only those arguments which the author presents in the text.

For simple conditionals, the author presents only the first figure, and all the arguments are valid since they are all instances of the rule known as modus ponens.[11] The author also says that these inferences could also be made if the subject is a relative pronoun such as "who," "whoever" and so forth. This statement, taken with the author's consistent use of conditionals whose predicates vary and whose subjects remain the same, suggests that the author may have in mind a complex type of argument involving quantified propositional functions of the form $(x)[\Phi x \rightarrow \Psi x]$. Thus his argument

Everyone who runs moves.

Peter runs.

Therefore, Peter moves.

is best expressed by

$(x)[Rx \rightarrow Mx]$

$Rp \rightarrow Mp$

$\underline{Rp\quad}$

Mp

This interpretation of the Summa would make it easier to analyze arguments which need definitions of predicates as premisses. But the Summa seems to be concerned more with the sentential calculus, and therefore I have decided to limit my consideration to this interpretation.

The inferences involving composite hypothetical propositions occur in the same figures, but they have more moods.[12] If such propositions have three component categorical enunciations, there will be eight moods; if they have four component categoricals, there will be sixteen moods. And all of the moods will occur in all the figures. The author presents the following inference schemes as examples of the figures and moods which may be obtained from variations of composite conditionals having three categorical enunciations as parts:

$p \rightarrow (q \rightarrow r)$
$\underline{p}$
$q \rightarrow r$ [valid]

$p \rightarrow (-q \rightarrow r)$
$\underline{p}$
$-q \rightarrow r$ [valid]

$p \rightarrow (q \rightarrow r)$
$\underline{-r}$
$-p$ [invalid]

$p \rightarrow (-q \rightarrow r)$
$\underline{q \rightarrow} -r$
$-p$ [invalid]

The two invalid arguments reveal, if the text is not corrupt, that the author is confused about the manner in which a consequent is denied. However, by the addition of premisses which supply appropriate definitions for the terms, these arguments become valid. He also presents some examples in which the conditional is the antecedent. Here again there are eight moods in two figures.

$(p \rightarrow q) \rightarrow r$
$\underline{p \rightarrow} q$
r [valid]

$(p \rightarrow q) \rightarrow -r$
$\underline{p \rightarrow} q$
$-r$ [valid]

$(p \rightarrow q) \rightarrow r$
$\underline{-r}$
$p \rightarrow -q$ [valid]

$(p \rightarrow q) \rightarrow -r$
$\underline{r}$
$p \rightarrow -q$ [valid]

Conditional enunciations composed of two simple conditionals have four categorical enunciations as parts, and they present an additional complication.[13] Mindful of the syllogism, the author imposes on these conditionals the requirement that they must have only three predicate terms, one of which must be taken twice. Since this term may occur twice in the antecedent, twice in the consequent or once in the antecedent and once in the consequent, there are three additional ways in which these conditionals may vary, and these ways are called the figures of Boethius. Thus, in the three figures of Boethius there occur the sixteen moods in each of two figures. The author then presents these examples:

$p \to q$
$q \to r$
$\underline{p\quad}$
r [valid]

$p \to q$
$q \to r$
$\underline{-r\quad}$
$-p$ [valid]

$p \to q$
$-p \to r$
$\underline{p\quad}$
$-r$ [invalid]

$p \to q$
$-p \to -r$
$\underline{p\quad}$
$-r$ [invalid]

$p \to q$
$-p \to r$
$\underline{-q\quad}$
r [valid]

$p \to q$
$-p \to -r$[14]
$\underline{-q\quad}$
$-r$ [valid]

$p \rightarrow q$
$r \rightarrow -q$
$\underline{p\ \ }$
$-r$ [valid]

In discussing the disjunctive syllogism, the author states that a disjunction is equivalent to a conditional which negates the disjunct taken as the antecedent.[15] The disjunction is varied in four ways, each of which is equivalent to one of the four types of simple conditionals, thus:

$(p \vee q) \longleftrightarrow (-p \rightarrow q) \qquad (-p \vee q) \longleftrightarrow (p \rightarrow q)$
$(p \vee -q) \longleftrightarrow (-p \rightarrow -q) \qquad (-p \vee -q) \longleftrightarrow (p \rightarrow -q)$.

The inference schemes for disjunctive syllogisms are the same as those for the corresponding conditionals. The author presents the following examples:

$-p \vee q$
$\underline{p\ \ }$
q [valid]

$-p \vee -q$
$\underline{p\ \ }$
$-q$ [valid]

$p \vee q$
$\underline{-p\ }$
q [valid]

$p \vee -q$[16]
$\underline{-p\ }$
$-q$ [valid]

$-p \vee q$[17]
$\underline{-q\ }$
$-p$ [valid]

$-p \vee -q$
$\underline{q\ \ }$
$-p$ [valid]

p V q
-q
p [valid]

p V -q
q
p [valid]

For the most part, the non-formal requirements which the author of the *Summa* imposed on hypothetical enunciations have no effect on the validity of the inference schemes which he presented when these inference schemes are given a truth-functional interpretation. His attempt to develop the full implications of the Aristotelian theory affected his interpretation of these inference schemes more than it affected the validity of the inference schemes which he presented in the text. His sentential logic, like his syllogistic, lacks the completeness which was present in the source of the tradition.

NOTES

[1] Ernest A. Moody, Truth and Consequence in Mediaeval Logic (Amsterdam, 1953), p. 9.

[2] Cf. Parma, pp. 92A-93A, for the material in this paragraph and the next.

[3] Parma, p. 92B.

[4] Parma, p. 93A. I shall use the symbolism of Patrick Suppes, Introduction to Logic (Princeton, 1957).

[5] Parma, p. 108A.

[6] Parma, p. 93A.

[7] SL, 1.22-1.23.

[8] Joseph P. Mullally, The Summulae Logicales of Peter of Spain (Notre Dame, 1945), pp. xxvii-xxix.

[9] Parma, pp. 106A-109A. The author uses the traditional syllogistic terminology in discussing the theory of consequences.

[10] Parma, p. 107A.

[11] Parma, p. 107A.

[12] Parma, p. 107A,B.

[13] Parma, p. 107Bf.

[14] Parma, p. 108B, has $-r \rightarrow -p$. This is an obvious error because the argument is not in the second figure of Boethius, as the author says it is.

[15] Parma, p. 108B.

[16] Parma, p. 108B, has $p \vee q$. This is an obvious error, for it is not equivalent to the conditional cited in that argument nor would it yield the conclusion given.

[17] Parma, p. 108B has $-p \vee -q$. This is an obvious error for it would not yield the conclusion given.

CHAPTER VII

REVIEW AND CONCLUSIONS

On the basis of my research and my examination of the four known manuscripts of the _Summa totius logicae Aristotelis_, I shall now review and evaluate the previous opinions which have been offered about this work and present my own conclusions. I should like to recall the fact that the earliest known document which provides any direct historical evidence about the _Summa_ is Bologna A. 1454, which dates from the end of the fourteenth century. While this codex apparently is not the author's autograph, no earlier one has been found, and no explicit reference to the _Summa_ has been found prior to that which occurs in the _Tabula_ of Petrus de Bergamo.[1] The late dates of the manuscripts, the absence of references to the _Summa_ and the limited number of manuscripts all strongly suggest that the work was limited in circulation. The catalogues of the works of Aquinas prepared about the time of his canonization do not list the _Summa_ for the probable reason that it was written after their composition. Since the later catalogues depend on the earlier ones, they also do not list the _Summa_. Thus, I believe that the _Summa_ was written between 1325 and 1375.

I agree with the consensus of modern scholarship that Aquinas did not write the Summa, and I agree with the reasons offered for this conclusion. I would also add that the style of the Summa is very different from that of Aquinas.

I am convinced that the work is of Dominican authorship for several reasons. Its extensive use of the works of Aquinas at a time when there were bitter controversies among religious orders suggests Dominican authorship. The absence of any logical developments from the first half of the fourteenth century argues strongly against any theory of Franciscan authorship and indirectly for Dominican authorship. Duhem's indication of a possible refutation of a Scotist position also suggests Dominican authorship.[2] The provenance of Bologna A. 1454 from a Dominican priory is a weak but probable argument for Dominican authorship. The fact that most of the fifteenth century scholars who wrote about the Summa were Dominicans seems to be significant. And all the modern scholars who have written about the Summa have accepted the theory of Dominican authorship, even when speculating about possible authors such as Hervaeus Natalis, Thomas Anglicus and Thomas Sutton. While all the historical indications which I have cited in Chapters I and II point to Dominican authorship of the Summa between 1325 and 1375, they do not allow any precision within that period. This dating, however, allows one to acknowledge all the influences on the Summa which Duhem found and which Grabmann believes to be correct.[3]

I have presented earlier the opinion of Mandonnet that one may be able to identify the Summa with the Introductoria ad logicam mentioned in the catalogue of Ptolomaeus de Luca, and I offered some reasons why this identification seems implausible.[4] To these I would add the opinion that the late dates of the manuscripts seem to argue against a date of composition prior to 1310. The opinion of Michelitsch that the title Introductoria ad logicam is a collective title for the brief opuscula on logical subjects attributed to Aquinas in the manuscripts and catalogues of the period seems much more plausible to me, and, in the absence of further evidence, I am inclined to agree with it.[5]

If Mandonnet is correct, however, one would have to date the Summa prior to 1310, and one would have to investigate the suggestions that Hervaeus Natalis, Thomas Anglicus or Thomas Sutton may have authored the Summa. Though I disagree with this early date for the Summa, I have investigated these possibilities. The identity of the Thomas Anglicus mentioned by Hieronymus Monopolitanus[6] is a mystery, but on this hypothesis it does seem obvious to search for a Thomas Anglicus sometime between the death of Aquinas and 1310. Many writers of the thirteenth and fourteenth centuries bore the appellation, "Thomas Anglicus," some of the most prominent being Thomas Sutton, Thomas Jorz (Jorsius, Joyce), and Thomas Wilton. Little and Pelster[7] mention the following

Englishmen, in addition to these, with the forename Thomas who were associated with the University of Oxford as students or professors between 1282 and 1302: Thomas Rundel, Thomas Cantilupe, Thomas of York, Thomas Bongey, Thomas of Eccleston, Thomas of Malmesbury, Thomas of Hedon, Thomas Corbridge, Thomas of Barneby, Thomas Cappelad, Thomas Docking, Thomas of Cobham, Thomas of Kirkby, and Thomas de Yllea. This small sampling indicates the difficulty in trying to identify the person meant by Hieronymus Monopolitanus.

The accidents of history, however, do suggest some lines of investigation. Among the apocryphal _opuscula_ which entered the thomistic corpus there are several which have been definitely attributed to Thomas Sutton and Mandonnet believed that others should be attributed to him.[8] Since Mandonnet attributed these works to Sutton because of their ultra-thomistic and logical characteristics, Sister Mary Corrigan investigated the possibility that Sutton may have authored the _Summa_. She includes the following portions of a personal letter from D. Sharp in her dissertation:

> The attribution of the treatise to Sutton, Dr. Sharp says, is 'pure conjecture. The only definitely certain works of Sutton are Quodlibeta, Quaestiones and a continuation of St. T's commentary on the De Gen. et Corr. A Stams ms. of the 1st quarter of 14th c. . . . lists also "Super predicamenta, super sex principia. Item complevit scriptum Thome super periermenias. Item super priora. Item de unitate formarum. Item duo quodlibet. Item de relatione. Item summam Thome. Item super Psalterium:" but apart from the Quodlibeta none of these treatises exist in mss. ascribed to Sutton. Pelster . . . has found anonymous mss. bearing some of

> these titles but his reasons for supposing them to be by Sutton are highly dubious, in any case the "Summa etc." doesn't come into the question.
> About the biography of Sutton we know equally little. This same Stams ms. speaks of him as "natione Anglicus, magister in theologia" and a 14 th c. Merton ms. (no. 138) has "Quodlibitum magistri Thome Sutton, socii domus de Merton postmodum ordinis predicatorum." This is all we know - nothing about his teaching abroad. Quodlib. and Quest. would support the opinion that he was "a staunch defender" of St. T.: indeed, he has little to say for himself - for it is always "the great doctor says."'[9]

Hence, there is no evidence to support the theory that Sutton authored the Summa.

Historians tell us little about the early life of Hervaeus Natalis Britonis except that he was teaching in Paris in 1303, at which time he was considered to be one of the "fratres celebriores" of the Dominican convent of Saint Jacques.[10] He became a Master in Theology in 1307 and then regent for the school of the Dominican province of France at Saint Jacques for the next two years.[11] In 1309 he was elected Dominican Provincial for the province of France, a post which he held until he was elected Minister General of the Order of Preachers in 1318.[12] As Minister General he promoted the cause of the canonization of Thomas Aquinas to a successful conclusion and then died shortly thereafter in August 1323.[13] In his academic life he was quite active in the defense of the teachings of Aquinas even though his own doctrines differed from those of Aquinas in some significant ways.[14] Saint Antoninus described Hervaeus as "subtilissimum in logica et philosophia."[15] Hervaeus wrote extensively on philosophical subjects, but most of his works exist in manuscript only. Among his works are several which should be consulted to determine the relationship between his doctrines and those of the *Summa*, namely, the *Tractatus de latitudine entium* and the *De decem praedicamentis*.[16] De Wulf and Grabmann believe that Hervaeus did not write the *Summa*, and I agree with this opinion because I would date the *Summa* after the death of Hervaeus, and because the style of the *Summa* is different from the style of the quotations from Hervaeus which Prantl presents.[17] Thus, while there is no evidence to justify the thesis that Hervaeus wrote the *Summa*, there is some evidence to support the opinion that the author of the *Summa* had read the writings of Hervaeus.

As I have noted in Chapter II, some scholars have said that Hervaeus did not write the *Summa* because the author of the *Summa* claims to have written a book on the hypothetical syllogism and Hervaeus wrote no such work.[18] I hesitate to endorse this argument for the simple reason that no scholar has ever identified any book on the hypothetical syllogism as having been written by the author of the *Summa*. Until such a work is found, the only evidence which we have about it is the statement in the *Summa*.

I have shown in Chapter III that all arguments about the author's mention of the city of Prague are based on the vulgate text of the *Summa* and have no support from the existing manuscripts.[19] Hence, conclusions drawn from them must be disregarded for the time being. I might also add that Duhem's suggested emandation of the text to "bragensis a Braga" is not acceptable because the mediaeval Latin name for the city of Braga, Portugal, was Bracara and the reference would then have to read "bracarensis a Bracara," and this is definitely not in the existing manuscripts.[20]

I have also shown in Chapter III that all arguments about the expression "el corere mio" are based on the vulgate text and have no support in the existing manuscripts.[21] Hence, any conclusions drawn from them must be disregarded for the time being. I might also add that the manuscript reading "lucrari est ditari" is probably a garbled version of Boethius' example, "ambulare est moveri,"[22] and that Hieronymus Monopolitanus probably added "el corere mio" to correspond to the Latin phrase "currere est moveri" which occurs earlier in the text.

I don't concur with the theory that the author of the Summa was a Spaniard. The principal evidence for this theory has been the expression "el corere mio," and this is no longer acceptable. The provenance of Bologna A. 1454 is a weak argument for the theory of Italian authorship, but I am inclined to accept that theory. In any case, the author seems to have been removed from the centers of logical controversy in the fourteenth century.

In conclusion, I believe that all presently available evidence supports the theory that the author of the Summa was an Italian Dominican who wrote the work sometime between 1325 and 1375.

NOTES

[1] Supra, p. 9.

[2] Supra, p. 38.

[3] "Die Werke . . . ," pp. 241-42.

[4] Supra, p. 12; p. 42.

[5] Thomasschriften, pp. 193-94.

[6] Supra, p. 19.

[7] A. G. Little and F. Pelster, S. J., Oxford Theology and Theologians (Oxford, 1934).

[8] "Introduction," pp. xlii-xliv.

[9] Personal letter of Dr. D. Sharp of Oxford to L. Keyes, graduate student; Sept. 8, 1933. Quoted in Summa . . . , pp. 346-47.

[10] Maurice de Wulf, A History of Mediaeval Philosophy, trans. Ernest C. Messenger, Vol. II (London, 1926), p. 48.

[11] Etienne Gilson, History of Christian Philosophy in the Middle Ages (New York, 1954), p. 747; F. Mortier, Historie des Maitres generaux de l'orde des freres precheurs, Vol. II (Paris, 1905), p. 532.

[12] Mortier, p. 532.

[13] Gilson, p. 747; Mortier, pp. 562-71.

[14] Gilson, p. 747; de Wulf, p. 50.

[15] H. Hurtur, S. J., Nomenclator literarius recentoris theologiae catholicae, theologos exhibens, aetate, natione, disciplinis distinctos, Vol. IV (1899), col. 384.

[16] Mortier, p. 532.

[17] De Wulf, p. 212; Grabmann, "Die Werke . . . ," p. 239; Prantl, III, pp. 264-73.

[18] *Supra*, p. 41.

[19] *Supra*, pp. 57-58.

[20] *Supra*, p. 39.

[21] *Supra*, pp. 58-59.

[22] Boethius, *In librum Aristotelis de interpretatione*, ed. J. P. Migne, *Patrologiae cursus completus, series Latina* (Paris, 1844-1864), LXIV, editio prima, cols. 308-310; editio secunda, cols. 427-30.

BIBLIOGRAPHY

Primary

Manuscripts

Codex A. 1454, Bibliotecha Communale dell' Archiginnasio, Bologna.

Codex 2300, Biblioteca Universitaria de Valencia.

Codex 215, Codices Urbinates Latini, Biblioteca Apostolica Vaticana.

Codex 463, Codices Barberiniani Latini, Biblioteca Apostolica Vaticana.

Editions

[Summa totius logicae Aristotelis]. Logica beati thome aurea et proficere volentibus utilis et necessaria diligenterque correcta et emendata in florentissimo studio lipsensi. Lipsiae: Mart. Landsberg, [non post annum 1491].

________. Logica sancti thome de Aquino. Ed. Hieronymo Monopolitano, O. P. Venetiis: Simon Bevilaqua, 1496.

________. Opuscula sancti Thome quibus alias impressis nuper hec, videlicet, Summam totius logice, Tractatum de usuris nusquam alias impressum. Ed. Antonio Pizzamano. Venetiis: mandato et expensio Octaviani Scoti, cura et ingenio Boneti locatelli, 1498.

Summa totius logicae Aristotelis. S. Thomae Aquinatis. Opera omnia secundum impressionem Petri Fiaccadori Parmae 1852-1873 photolithographice reimpressa. Vol. XVII. Ed. Vernon J. Bourke. New York, 1950.

Secondary

Annuario delle Biblioteche Italiane. 2d ed. Rome, 1956.

Aristotle. Aristotle's Prior and Posterior Analytics. A Revised Text with Introduction and Commentary by W. D. Ross. Oxford, 1949.

________. The Basic Works of Aristotle. Ed. Richard McKeon. New York, 1941.

Bochenski, I. M., O. P. A History of Formal Logic. Trans. and ed. Ivo Thomas, O. P. Notre Dame, 1961.

________. A Precis of Mathematical Logic. Trans. Otto Bird. Dordrecht, 1959.

Boehner, Philotheus, O. F. M. Medieval Logic. An Outline of Its Development from 1250 to *ca*. 1400. Chicago, 1952

Boethius. Opera omnia. Ed. J. P. Migne. Patrologiae cursus completus, series Latina, vols. LXIII-LXIV. Paris, 1891.

Bourke, Vernon J. Thomistic Bibliography, 1921-1940. St. Louis, 1945.

Chenu, M-D. Introduction à l'étude de saint Thomas d'Aquin. Paris, 1950.

Copinger, W. A. Supplement to Hain's *Repertorium bibliographicum*. London, 1897.

Copleston, Frederick, S. J. A History of Philosophy. Vol. III: Ockham to Suarez. London, 1953.

Corrigan, Mary, R. S. C. J. "*Summa totius logicae Aristotelis*: a translation and a Study of the Aristotelian Sources." Unpublished Ph.D. dissertation, Department of Philosophy, Fordham University, 1934.

De Rubeis, Johannes Franciscus Maria. De gestis et scriptis ac doctrina Sancti Thomae Aquinatis dissertationes criticae et apologeticae. Venice, 1750. Reprinted in S. Thomae Aquinatis, Opera omnia, issu impensaque Leonis XIII. P. M. Vol. I. Rome, 1882.

Duhem, Pierre. Etudes sur Léonard de Vinci. Troisième série. Paris, 1913.

________. "Note sur une Somme de Logique attribué à saint Thomas d'Aquin," Revue de Philosophie, XIV (1909).

Foresti, Jacopo Filippo, da Bergamo. Supplementum chronicarum. Venice: Bernardinus Benalius, 1486.

Gilson, Etienne. History of Christian Philosophy in the Middle Ages. New York, 1954.

Grabmann, Martin. "Die Werke des Hl. Thomas von Aquin," Beiträge zur Geschichte der Philosophie und Theologie des Mittelalters, XXII (heft 1/2, 1949).

________. Handschriftliche Forschungen und Funde zu den philosophischen Schriften des Petrus Hispanus. Munich, 1936.

Grisez, Germain G. "Basic Oppositions in Logical Theory." Unpublished Ph.D. dissertation, Department of Philosophy, University of Chicago, 1959.

Gutierrez del Caño, Marcelino. Catalogo de los Manuscritos existentes en la Biblioteca Universitaria de Valencia. Valencia, 1913.

Hain, L. Repertorium bibliographicum. Stuttgart, 1826.

Hurter, H., S. J. Nomenclator literarius, recentioris theologiae catholicae. IV. 1899.

Issac, J., O. P. Le Peri Hermeneias en Occident de Boèce à St-Thomas. Paris, 1953.

Kruitwagen, Bonaventura, O. F. M. S. Thomae de Aquino Summa Opusculorum. Kain, 1924.

Lachance, Louis, O. P., "St-Thomas dans l'histoire de la logique," Etudes d'histoire littéraire et doctrinale du XIII^{e} siècle, Première série (Paris, 1932).

Leo XIII, Pope, "Epistola Encyclica de Colenda S. Thomae Philosophia," Acta Leonis Papae XIII, Vol. I (Bruges, 1887).

Little, A. G. Initia operum latinorum quae saeculis XIII, XIV, XV attribuntur. Manchester, 1904.

Little, A. G., and Pelster, F., S. J. Oxford Theology and Theologians. Oxford, 1934.

Lucchesi, Carlo. Inventari dei Manoscritti delle Biblioteche d'Italia. Ed. Antonio Sorbelli. Vol. XXXVI. Florence, 1926.

Mandonnet, Pierre, O. P. "Introductio," S. Thomae Aquinatis, Opuscula omnia genuina quidem necnon spuria. Vol. I. Paris, 1927.

________. Des écrits authentiques de S. Thomas d'Aquin. 2d ed. Fribourg, 1910.

________, et J. Destrez, O. P. Bibliographie Thomiste. Paris, 1921.

Maritain, Jacques. Formal Logic. New York, 1937.

Meersseman, G., O. P. Laurentii Pignon catalogi et chronica, accedunt catalogi stamsensis et upsalensis scriptorum O. P. Monumenta ordinis fratrum Predicatorum historica. Vol. XVIII. Rome, 1936.

Michelitsch, A. Thomasschriften. Graz, 1913.

Mohan, Gaudens E., O. F. M., "Incipits of Logical Writings of the XIIIth - XVth Centuries," Franciscan Studies, XII (1952), p. 421.

Moody, Ernest A. Truth and Consequence in Mediaeval Logic. Amsterdam, 1953.

Mortier, F. Histoire des Maîtres généraux de l'ordre des frères prêcheurs. Vol. II. Paris, 1905.

Mullally, Joseph P. The Summulae Logicales of Peter of Spain. Notre Dame, 1945.

Pelzer, A., Review of S. Thomae de Aquino summa opusculorum, anno circiter 1485 typis edita, by Bonaventura Kruitwagen, Bulletin Thomiste, II (1925), p. 347.

Petrus Hispanus. Summulae Logicales. Ed. I. M. Bocheński, O. P. Turin, 1947.

Petrus de Bergamo. Tabula super opera omnia Thomae Aquinatis. Basel: Bernhardum Richel, 1478.

Pirenne, Henri. Medieval Cities. Trans. Frank D. Halsey. Princeton, 1925.

Poinsot, John [Ioannes a Sancto Thomas, O. P.]. Cursus Philosophicus Thomisticus. Ed. Beato Reiser, O. S. B. 3 vols. Turin, 1930-1937.

________ [John of St. Thomas]. Outlines of Formal Logic. Trans. F. J. Wade, S. J. Milwaukee, 1955.

Prantl, Carl. Geschichte der Logik im Abendlande. Leipzig, 1927.

Prior, A. N. Formal Logic. Oxford, 1955.

Stornajolo, Cosimus. Bibliotecae Apostolicae Vaticanae Codices Manu Scripti Recensiti: Codices Urbinates Latini. Tomus I. Rome, 1902.

Thomas Aquinas, St. In Aristotelis libros Peri Hermeneias et Posteriorum Analyticorum exposita. Cura R. M. Spiazzi, O. P. Turin, 1955.

Wild, Ignaz, "Uber die Echtheit einiger Opuscula des Hl. Thomas," Jahrbuch für Philosophie und spekulative Theologie, XXI (1907).

Wulf, Maurice de. History of Mediaeval Philosophy. Trans. Ernest C. Messenger. 2 vols. London, 1926.

Wyss, Joseph M. De Natura Materia. Introduction and Text according to the tradition of the manuscripts. Louvain, 1953.

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THE DEVELOPMENT OF LOGIC IN THE DOMINICAN SCHOOL

VOLUME II

APPENDIX

BY

JAMES J. CANNON, JR.

NEW HAVEN, CONNECTICUT

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TRANSLATOR'S PREFACE

In the pages that follow I have tried to provide a working translation of the Summa totius logicae Aristotelis which reflects the style and the spirit of the original text. In the absence of a critical edition of the text, I have chosen to translate the most accessable version of the vulgate text as literally as possible and with a minimum of editorial interpretation. Since the Latin style of the corrupt vulgate text is so poor, I have had to translate into a poor English style in the interest of faithfulness to the original. I have altered the punctuation of the vulgate text in many cases, especially in the use of quotation marks. Some contemporary logicians use quotation marks to distinguish between the use and mention of a word, while others use them to distinguish among various levels of supposition. To avoid committing the author of the Summa to distinctions of which he was unaware or which he would not accept and to preserve the ambiguities and clear confusions present in the text, I have refrained from using quotation marks as often as possible.

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APPENDIX I

A SUMMA OF THE ENTIRE ARISTOTELIAN LOGIC OR ON THE PREDICABLES, ON THE CATEGORIES, ON ENUNCIATION, ON SYLLOGISMS, AND ON DEMONSTRATION

A TRANSLATION OF THE

TOTIUS LOGICAE ARISTOTELIS SUMMA

FOREWARD[1]

All men by nature desire to know.[2] Now knowledge is the effect of demonstration, for a demonstration is an apodictic [apodicon][3] syllogism, that is, one producing knowledge. And moreover, that such a natural desire may be fulfilled in man, demonstration is necessary. For there cannot be an effect in something of this kind without a cause. And since, as has been said, [54A-2*][4] a demonstration is a syllogism, in order to understand it, one must first understand the syllogism. Now since the syllogism is a certain whole composed of parts, it cannot be understood without knowing its parts. Therefore, in order to understand the syllogism, one must first understand its parts.

Now of the parts of the syllogism, some are proximate, for instance the propositions and the conclusion, which are all called enunciations; while others are remote, for instance the terms which are the parts of an enunciation. Therefore, it is necessary to treat of these things, namely the enunciation and the terms, before treating of the syllogism. Now any simple [qui sine complexione dicitur] term whatsoever signifies a substance or a quantity or a quality or something in one of the other categories,[5] and therefore, before treating of the enunciation, it is necessary to discuss precisely [*determinare*] the categories. And since a category as it is taken here is nothing other than an ordering of the predicables in a predicamental order, therefore, in order to understand the categories, one must first understand the predicables.

To the end therefore, that we might reach that knowledge desired naturally by all [men], this is to be the order to which, with the help of God, we will adhere: First, the five predicables are treated; secondly, the ten categories; thirdly, the enunciation; fourthly, the syllogism in itself; fifthly, the syllogism applied to demonstrative matter, or demonstration.[6]

But I do not intend at present to concern myself with the syllogism applied to probable matter, which pertains to the part of logic which is called dialectic, and which is discussed in the book of the *Topics*; or with the syllogism applied to sophistical matter, which is opposed to the dialectical syllogism, [and] which is discussed in the book of *Refutations*.[7]

TREATISE I

ABOUT THE FIVE UNIVERSALS ACCORDING TO REALITY AND ACCORDING TO LOGICAL INTENTION, OR ABOUT THE PREDICABLES

CHAPTER I

WHAT A UNIVERSAL IS, AND HOW IT ORIGINATES

In order to understand the five universals or predicables which Porphyry sets forth,[1] it should be known that, since our intellect is distinct [*separatus*] from matter (for it is not a potency affixed to a corporeal or material organ, and everything which is received in something is received according to the nature [*per modum*] of the recipient), therefore, that which is presented in a direct act of the intellect must be stripped of matter and of the conditions of matter existing here and now. And I mean by this "stripped of matter" not simply of all matter, but of signate matter [*materia signata*];[2] for natural things are cognized with matter, and on account of this it is said that it ought to be stripped from the conditions of matter. For example, in our imagination [*phantasia*] there is an image or form representing this man as he was in some exterior sense, which form, by the power of the agent intellect, acts on the possible intellect, just as colors, by the power of light, act on the visual faculty, and then some form is caused in the possible intellect, which [form] is called an intelligible species or, according to others, an act of understanding or a word, which form represents the man, not, however, as he is here and now, but abstracted from such conditions, and this is said to be a universal.

Whence in the man thus understood there are two things to consider, namely, the human nature itself or the one possessing it, and the universality itself or the abstraction from the aforesaid conditions of matter. With regard to the first, man signifies the reality [res], but with regard to the second it signifies the intention, for no man is found in reality who does not exist here and now. And the nature itself, as such, is said to be a first intention. But since the intellect reflects upon itself and upon those things which are in it either subjectively or objectively, it considers the man again as known by itself without the conditions of matter. And it sees that such a nature understood with such universality or abstraction can be attributed to this and to that individual and that it really is in this and in that individual. Therefore, it forms a second intention of such a nature, and it calls this a universal or predicable, or something of the kind.

Therefore, according to what has been said, the thing [res] as it is understood [intellectus] is called a universal, and inasmuch as the intellect considers this universality, so it attributes something to it, namely, to be in many things or to be said of many things, and thus it is called a second intention.

Now we must speak about these second intentions, namely, about the five universals or predicables. They are called universals insofar as the intellect attributes to them a being in many things, but they are called predicables insofar as the intellect attributes to them a being said of many things. And they are these: genus, species, difference, property and accident.

CHAPTER II

WHAT A GENUS IS, AND WHENCE IT HAS ITS ORIGIN

As it is taken here, a genus is that which is predicated essentially [*in eo quod quid*] of many things differing in species. Now in order to see the parts of this description, it should be known that a genus is said to be predicated of many species or is divided into many species. And since it is not one in reality [*res*], but only conceptually [*secundum rationem*], therefore it is not divided according to reality. And since a genus is not one in reality, therefore the subjective parts or species into which it is divided are really different and distinct among themselves. Therefore, they must have something real in themselves through which real thing [*reale*] one is different from another.

It should be noted here that one and the same thing, through its essence, has some similarity or agreement and some real difference with the essence of another thing, which similarity or difference can be more or less, in comparison to diverse things. For example, Socrates, through his essence, which is from this soul and this body, is similar to Plato and to this horse and to this plant. For Socrates, through his essence, is rational, sentient and living. In all three of these things he is similar to Plato. However, he is similar to this horse in two [of them], namely, in being sentient and in living, and he is different in one, since rationality, which is not in this horse, is really in him. But he is similar to this plant in one thing, namely, in living. But since our intellect is able to distinguish those things which are joined together in a thing [*in re*] when one of them does not fall within the concept [*ratio*] of another and since rationality considered in itself is not within the concept of being sentient, nor being sentient within the concept of living, therefore, it takes [*accipio*] those things separately in Socrates with respect to diverse things, as has been said [55A-6*,8*].[1] Therefore, when the intellect considers in a thing [*in re*] that in which it agrees with other things, it attributes to the thing conceived an intention of universality. And since in each singular thing there is something to consider which is proper to that thing insofar as it is that thing, as in Socrates there is something to consider which is proper to Socrates, insofar as he is this man, in such a way that it belongs [*convenio*] to no other [thing], therefore, the intellect attributes to the concept of the thing the intention of singularity and calls it a singular or an individual. And these, namely, universality and singularity, are second intentions.

Whence, although it was said above [55A-6*] that intentions are made by the intellect, it is necessary that they have some ground in a thing outside [the intellect] [*res extra*]. For, to the intention of singularity there corresponds something external which is proper to Socrates insofar as he is this man: but to the intention of universality there corresponds externally as a ground that in which Socrates is similar to other things. Therefore, when there are things which are similar in one [respect] and different in another, provided that such difference be from the form and not from the signate matter or from that which is proper to this individual as such, the intellect attributes the intention of genus to that one way in which these things are similar and calls [it] a genus.

It should be noted here that, according to Avicenna, there are two kinds of form. One [form] is that which is a part of the composite, as the soul is the form of man, for man is composed of a soul and a body. However, another form follows from the whole composite, as humanity, which is also a form of man and, taken in this way, the form is called the quiddity and it is that which the intellect understands about the thing. Therefore, when the intellect understands the aforesaid form or quiddity as it is determined to this matter, for example, humanity as it is in this signate matter, namely, in this flesh and in these bones and the like, then by making it concrete, for example, this man, it understands a singular, and to this it attributes the intention of singularity. But if it understands the said form, not as it is determined to this matter (since every such form in itself is able to be multiplied with respect to that matter), the intellect attributes the intention of universality to the thing having such a form; whence man is a universal.

And if those things which agree in this form do not have among themselves a difference pertaining to the said form, but differ only through the signate matter of this one or of that one, in which the said form is determined in this one or in that one, according to the way which is discussed in the treatise [*sic*] "On Species",[2] then those things are said to differ only in number. And a concrete subject [*substantivum*] of this kind taken [*accipio*] as able to be multiplied, for example, man, is called the lowest species [*species specialissima*]. But if those things which are similar in some form which can be multiplied, as has been said [55B-10* *passim.*], differ among themselves not only with respect to signate matter, as has been said [*ibid.*],[3] but also with respect to a specific difference, then such things are said to differ in species. For example, such a form is animality, in which Socrates and this horse are similar, who between themselves differ not only with respect to this flesh and these bones, but also in the fact that this man has the form of humanity and the other that of equinity. And that form in which they are similar taken concretely, namely, animal, is the genus. And since, as has been said [55B-10*,11*], such a nature taken concretely can be said of many things formally different which are in diverse species, hence it is to such a nature that the intention of genus can be attributed. Therefore, it is said that the genus is predicated, that is, is predicable of many things differing in species, or it is said to be divided into many species. And this "taken concretely", which was mentioned, is understood only in the category of substance; but in the other categories, and most of all in the absolute ones, genus and species are taken abstractly.

And genus is said to be predicated essentially [_in eo quod quid est_], that is, substantively, according to the grammarians, as animal, which is predicated of man and horse, is a substantive and not an adjective, for sentient, which is predicated of animal, although it is of the essence of animal, nevertheless is not said to be predicated essentially [_in quid_], but qualitatively [_in quale_], and the reason is that it is an adjective.[4] And it should be known that those things which are predicated essentially [_in quid_] belong to the essence or quiddity of those things of which they are predicated. Therefore, to be predicated essentially not only can mean a mode of signifying, as has been said [55B,56A-11*,12*], but it also means the quiddity of that thing of which it is predicated. And what a genus is, is evident.

CHAPTER III

WHAT A SPECIES IS AND WHENCE IT TAKES ITS ORIGIN

A species is that which is predicated essentially [*in eo quod quid*] of many things differing in number. Now although this aforesaid description of a species can be understood from what has been said, nevertheless, for the greater elucidation [*declaratio*] of some things which have been said above, it should be known that, although the proper principle of individuation arises from the signate matter, as was said above [54B-5*; 55A,B-9*],[1] nevertheless it is not to be understood that it is not somehow from the form. Here note that something can be distinguished from another thing through a form in two ways. In one way such a distinction is through the form by means of the concept [*ratio*] of the form, inasmuch as diverse grades are found in forms, and it is necessary that what is so distinguished differ in species, as was said above [55B-11*,12*]. In another way something can be distinguished from another thing through the form, not according to the absolute concept of the form, but according to the fact that [*secundum quod*] it is this form. And thus two separate quantities differ in number whether they are separated by the intellect, as in mathematics, or are separated from matter in reality [*secundum rem*] by divine power, as the quantity of two consecrated hosts, for quantity is a type of [*quiddam*] form. And also separated souls differ in number thus, for they do not differ in matter, which they do not have nor are they joined to it, and not through a relation to the matter to which they are able to be joined, since a relation is posterior to that which is related.

It should be noted here that every form having many things under itself, that is, which is taken universally, has a certain latitude,[2] for it is found in many things and is said of many things. And latitude can be in forms in two ways. In one way [there is latitude] according to formal grades, of which one is more noble and complete [*perfectus*][3] in itself than another and this, as has been said [56A-13*], is the latitude of the genus under which there are diverse formal grades specifically different. In another way there is latitude according to the numerical multiplication in the same grade. And since this latitude is not according to the absolute concept of the form, the form in which there is such a latitude must imply [*importo*] in its own concept something through which such a latitude is suitable to it, which is something other than the absolute concept of the form.

And if we speak of that form which is a part of the composite, for example, of the rational soul, that on account of which such a latitude is suitable to it is a certain incompleteness [imperfectio], namely, according to which it is naturally constituted [nata est] to have the nature [ratio] of a part of some whole; not only that it is a part conceptually [secundum rationem], since even specific forms are parts conceptually, but also because it is a part in reality [secundum rem], for the rational soul is a real part of a man and whiteness is a real part of a white man. Whence in order that such forms be multiplied under a species, they must have that potentiality which makes real parts. And, with respect to this, that potentiality whereby the rational soul through its essence is naturally constituted to be a part of the composite gives to it a certain latitude of multiplication according to the same grade, notwithstanding that it may be separated and that it may not actually inform matter. And since such a potentiality does not belong to the essence of the angels, therefore the angels do not differ among themselves in number, but each angel by itself constitutes a species, for the nature of an angel is not naturally ordained to be a part of a composite from which composition a species may follow, as the human soul. Therefore, the potentiality of a form, which the form has, namely, that it may be joined to matter, causes individuals to be multiplied under it. And what was said above [55B-10*,11*] ought to be understood thus, namely, that humanity, which is the form following the whole composite, if it be considered as determined to this signate matter, makes a singular, for humanity as has been said [*ibid.*], implies a soul and a body, whence, by speaking about this and this soul, it speaks about a singular. And since a soul existing in the same grade cannot be divided into many, as has been said [56A-13*, 14*], unless on account of a potentiality which it has in order that it might be united to signate matter, therefore, it must be said that signate matter is the principle of individuation and not the form unless through the matter to which it has a natural potentiality for union [*ut sibi uniatur*]. And thus it is evident what a species is.

However, it should be known that although the specific form, as has been said [56A-13*,14*], is able to be multiplied of itself on account of the potentiality which it has for union with matter, nevertheless sometimes such a multiplication is impeded accidentally. For example, if all men were to die and only one were to remain, then humanity would not be in many material objects. Or it can be impeded on account of the condition of matter, as there is now only one sun, not that it is repugnant to the solar nature to be in many things according to the consideration of the form, but because there is no other matter susceptible of such a form. Whence the sun is a species in one individual.

CHAPTER IV

ON THE ORIGIN OF DIFFERENCE AND WHAT IT IS ACCORDING TO REALITY AND ACCORDING TO INTENTION

Difference, as it is taken here, is described in two ways. The first is: a difference is that which is predicated of many things differing in species qualitatively [in eo quod quale]. The second is: a difference is that which a species possesses beyond a genus. And in order to understand the first description it should be known that, as has been said [56A-14*], in some forms there can be a latitude within the same form according to formal grades, of which one [formal grade] is more noble and perfect [complete] than another, and the genus is taken from this form.

It should be noted here that there are diverse grades of being in entities. They are either substantial or accidental grades. Although these grades may be distributed among different entities, nevertheless, sometimes some one [entity] is found comprehending many grades of substantial or accidental perfection. For example, vegetative, sentient, and rational are substantial grades of beings [ens], for a plant is substantially vegetative, but a dog is substantially sentient and a man is substantially rational. And these grades, dispersed in many entities, sometimes are found in only one, for example, in man. For a man, through his substantial form which is in one [entity], has all three of these perfections, for he is vegetative, and he is sentient, and he is rational. Whence Socrates, through his one essence, is similar to a plant, to a dog, and to Plato, as has been said [55A-8*,9*].

And this similarity which Socrates has to a plant can be one of two. For, as the likeness of two black things is one of two because of the one as subject and of the other as term, thus such a similarity is of Socrates as its subject and of that plant as its term. I do not say that on account of this such a similarity is a real [*secundum esse*] relation, but it is a verbal [*secundum dici*] relation, as the ground of a real [*secundum esse*] relation.[1] And such a similarity which really is one, as has been said [56B,57A-17*,18*], moves our intellect to [form] one concept, for example, living, from which concept a genus, or sometimes a species, is taken, as can be understood from what has been said above. Whence such a similarity is related to a genus as a remote ground. But the concept of living to which such a similarity moves our intellect is related to a genus as proximate ground, and thus, although the unity of a genus is a unity of reason, nevertheless, in some way it has to be grounded in one real thing [*secundum rem*].

But the dissimilarity which exists between Socrates and a plant is that Socrates senses and a plant does not, from which dissimilarity, which divides the living which is common to a man and common to a plant, the difference is taken. Whence, through this difference, it is shown that living is found in something having some perfection which is not in a plant. And since Socrates is similar to a dog in such a perfection, for example, being sentient, likewise, between them there is a similarity moving to one concept from which, if it is taken substantively in the concrete so that such a concrete [substantive] expresses explicitly of its own significance both living and sentient, another genus is taken, namely, animal. But if it is taken in the concrete adjectively, so that it expresses explicitly of its own significance only that perfection, namely, sentient, the difference is taken, for example, insofar as it is called sentient; and likewise for the others on to the ultimate specific difference beyond which there is no formal perfection. Therefore, since as many things can be called sentient as are called animal, but animal, which is the genus, is predicated of many things differing in species, likewise also, sentient, which is the difference, is predicated of many things differing in species.

It should be noted that a substantial form has being [esse] in two ways. One is objectively in the intellect, and according to this [mode of] being the intellect attributes to it an abstract name. For the intellect considers it by not considering the matter in which it is, and on account of this it gives it an abstract name, as humanity. It has the other [mode of] being in matter, toward which it has a double reference [*habitudo*]. One is that it inheres in it [matter] as if dependent for existence [*salvatus*] on it, and thus in some way it has the mode of an accident; and so the intellect gives it a concrete adjectival name which is the name of an accident, as human. The second reference it has to matter is as completing and perfecting the same, and thus it does not have the mode of an accident, but the mode of a substance, and thus the intellect gives it a concrete substantive name, as man.

It should be noted that animal differs from sentient, since animal is derived from sentient soul [*anima sensibilis*], but sentient is derived from sentiency. And since the soul is related to sentiency as a potency to an act, therefore, the difference is more actual than that of which it is the difference, although they both encompass the same thing.

And it is said that the difference is predicated qualitatively [*in quale*], that is, adjectively. And the reason for this is, as has been said [57A-19*], that the dividing difference of any genus is taken from a perfection [completeness] which all the things which are under the genus do not have. This perfection, compared to that from which the genus is taken, exhibits itself as something perfect [complete] and consequently as formal. And since adjectives are commonly taken from the form, which forms have [the attribute of] adjectivity [*adjacere*], therefore, for designating that the difference is taken from something formal only and that it alone expresses it explicitly, the difference is perfected [made complete] by means of [*per modum*] an adjective in its own predication.

Now in order to understand the second definition of difference, it should be known that it is impossible for a part to be predicated of the whole, but something which is truly predicated of another must speak about the whole. And since man is predicated of Socrates, and also animal and rational, it is necessary that man speak about the formal whole which is in Peter [*sic*], and I mean "formal" by speaking about the form which follows from the whole composite. Likewise, animal must express the formal whole, and likewise, rational must express the formal whole, but in diverse ways. For rational expresses that whole which man expresses, nevertheless not explicitly, but implicitly. For rational means having reason. Whence it expresses the reason alone in its principal signification. But because it speaks of "having reason", a man, whoever he may be, is understood implicitly in this because it says "having";[2] and so it speaks about the whole which man expresses, nevertheless, to some [degree] explicitly and to some [degree] implicitly. Likewise also, animal expresses the whole which man expresses, yet not explicitly; for animal means having life and feeling, whence in its principal signification it expresses only life and feeling, but man is implicitly understood in this because it says "having". But man explicitly expresses the formal whole which is in Socrates, for it means having humanity, which humanity explicitly expresses the motion and feeling which animal expresses and reason which rational expresses. Whence man, in its principal signification, means rational animal, for instance, by explicitly comparing the meanings of these [terms], since the genus and difference, as has been said [57A,B-18*,19*,20*],[3] do not signify each of them, but only a part, but the species explicitly signifies what it signifies. Therefore, each explicit signification of the species exceeds the explicit signification of the genus in the explicit signification of the difference. Likewise, also, it exceeds the signification of the difference in the signification of the genus. Therefore, it is properly said in the aforesaid description that the difference is that by which the species exceeds the genus, since the species exceeds, that is, exceeds in its signification, even that which the difference signifies explicitly.

And thus it is evident what a difference is according to its nature [*secundum sui rationem*].

CHAPTER V

ON THE MOST GENERAL GENUS AND THE SUBALTERN GENUS: AND THAT BEING [ENS] CANNOT BE A GENUS

And genus is divided into the most general genus [*genus generalissimum*] and the subaltern [*subalternum*] genus. The most general genus is that above which there is no other supervening genus, which ought to be understood thus. For as has been said [55B-10*], genus is taken from the concept of the similarity of some things which are dissimilar in some other formal perfections, from which formal perfections differences are taken. Thus animal is a genus, since it expresses motion and feeling, in which a man and a horse are similar, which nevertheless, are dissimilar in some other perfections; for example, since in the man there is reason which is not in the horse, from which [fact] a difference, namely, rational, is taken.

A man is also similar to a plant in living [*vivus*], from which similarity another genus is taken, namely, animate body [*animatum corpus*]; and this is a lesser similarity than the first. And since animate body extends to more things [*se extendo*] than animal, therefore this is the superior genus. But he is similar to a stone in corporeity, from which some superior genus is taken, namely, body. But also he is similar to an angel in [being a] substance, which is a still more remote similarity, from which another genus is taken, namely, substance.

But if a man be dissimilar from something in substance, no similarity remains between them except being [*entitas*]. And since being [*ens*] cannot be a genus, as will be said [58A-25*], it remains that substance is the most general genus, while the remaining genera which we mentioned under substance, namely, body, animate body and animal, are subaltern genera which are taken to be genera sometimes and [to be] species sometimes; for each of them is a species in respect of a superior genus and is a genus in respect of an inferior species.

From these [considerations] it is evident [*potest patere*] how one and the same difference is divisive and constitutive. For, if animate, which is a difference, is added to body, then, since that which body signifies is found in things not having this perfection, which is [being] animate, this difference divides body, which is now a genus, and constitutes one species, namely, animate body. Whence this difference, animate, at the same time is divisive of a genus and constitutive of a species. And thus [this] is to be taken of the other genera down to the most special species, of which there are no divisive differences. And what the most special species are can be understood [*habere*] from what has been said.

And that being cannot be a genus is evident thus.[1] For, as has been said [57B-22*], that is a genus which is so related to its divisive difference that the difference signifies something explicitly which the genus itself does not signify, although they both mention the whole implicitly. Whence the genus is outside the comprehension [*intellectus*] of the differences. And an example is given in things composed of matter and form: for fire and water are similar in prime matter and differ in form, since the substantial form of fire is in one [of them] and [that] of water in the other. Whence fire and water so agree [*convenio*] in matter that matter is an essential part of them, but the form of fire and that of water agree in matter as in something different from their essences, yet determinable through them. Thus, in their own way the species agree in the genus in a way other than the differences. For the species agree in a genus as in that which is included in their concept [*ratio*] and in their principal signification; for animal is included in the concept of man and in its principal signification. But the differences agree in a genus as in something determinable conceptually [*secundum rationem*] through them, which is outside the comprehension of them, as rational and irrational agree in animal. Therefore, since nothing can be found outside of whose comprehension there is being, nothing can be a difference of being nor, consequently, can being be a genus. Another reason is also assigned why being cannot be a genus: because it cannot be univocal [with regard] to substance and accident.

It should be noted that in the aforesaid example, matter is taken otherwise than it was taken in the first, when it was said that individuals are distinguished through matter and that matter is the principle of individuation. For there is prime matter and signate matter or that which, namely, designates quantity and the other individuating accidents. Now that which is in potency to all substantial forms is called prime matter, which is considered only in its bare potentiality [and] which is said to be one through the removal of all forms, inasmuch as it is considered one, for example, something potential, perfectible through forms, without this [individual matter] which is actually perfect, and we were speaking about this matter in the example given above. But signate matter, or this [individual matter], is [so] called for it has to be with this quantity and with this quality and with [in] other accidents, and thus considered it is not one for all things, but is divided among individuals of every kind, as the aforesaid accidents are distributed [*divisus*] to each individual. And since all individuals,[2] and each of them has a part of prime matter, by considering that part, not as it is designated by these or those accidents, fire and water are said to agree in one matter, as was said in the example mentioned.

Therefore, it is evident about the three essential predicables which concur in the ordering of the categories, 100 namely, about genus and species and difference, which are called essential since they belong to the essence of those things of which they are predicated, and so forth.

CHAPTER VI

ON THE ORIGIN OF PROPERTY; AND HOW IT BELONGS TO EVERY INDIVIDUAL OF A SPECIES AT ALL TIMES

Now we must speak about the two accidental predicables, namely, about property and accident. And they are called accidental since they are not about the substance or the essence of the subjects of which they are predicated. It should be noted that real being is divided into substance and accident, whence, by thus taking accident as it is divided against substance, property is an accident and is counted among the accidents, for it is not of the substance of that of which it is the property, and so it cannot be in the category of substance. Accident is taken in another way, not as it is divided against substance, but as it is one of the five predicables, and thus property is not an accident, on the contrary, it is divided against it.

Now property is described thus: property is that which belongs to only one thing and at all times and is predicated conversely of it. And in order to see the particulars of this definition, since it is very necessary for us to know [what] property [is], (which the Philosopher calls proper passion), because nothing is concluded in a demonstration unless it be a proper passion of the subject, it should be known that something may be said or may be predicated of something else in two ways, namely, essentially [per se] and accidentally. An accidental predication can be made in three ways: in one way, when an accident is predicated of a subject, as "The man is white;" in another way, when a subject is predicated of an accident, as "The white thing is a man;" in a third way, when an accident is predicated of an accident, as "The white thing is musical." But essential predication is made in many ways, as will be made evident in the treatise, "On Demonstration".[1] Of these, the second way of predicating essentially is when a property is predicated of that of which it is the property, as "Man is risible." Therefore, when a property is predicated of a subject, since it is not predicated accidentally, as is said about accidents in respect to their subjects, but essentially, it has toward its subject a different disposition [habitudo] than common accidents have. For these have no relation [habitudo] to their subject except as to a material cause, by here taking matter for the subject which is in potency toward accidents as toward certain actions inherent in itself. Whence if a property has only this relation to a subject, so that, namely, the subject would be merely passive and receptive of it, then since what is merely receptive of anything does not impose the necessity of existence on that in respect of which it is such, it follows that property would not follow the subject necessarily, nor consequently could it be predicated essentially.

And yet we see the opposite; for in natural things we see certain operations which always belong [convenio] to all things which are of the same species, as the attraction of iron always belongs to every magnet. Whence it is necessary that such operations follow from some intrinsic principle persisting in those bodies. Nevertheless this principle is called a potency or a power [virtus], since a power is a potency which is directed to an end which can be achieved [facio]. Therefore, such a principle has a necessity of being from the specific form of that thing.

And it cannot be said that not the subject, but the one generating it, imposes the necessity of being on such a power, since if the subject has no necessary disposition toward such a property, notwithstanding that the generator always generates the subject with such a passion, nevertheless such a proper passion would be accidental and not essential with respect to the subject. And thus it could not be demonstrated, the opposite of which will be shown below.[2] Therefore it remains that the subject has a disposition of efficient cause toward its property, which can be made clear thus. For proper qualities act as instruments of substantial forms, in fact they act toward the production of substantial forms; for instance, the heat of fire acts upon wood to generate fire, which it could not do unless it were an instrument of the substantial form of this agent. Therefore this is [so] because they receive the power of doing this from substantial forms. And such qualities do not receive another power differing from them from substantial forms. Therefore, they receive nothing except themselves. Therefore, the substantial forms of subjects are the effective cause of their properties.

In truth, there seems to be a great doubt here, for it follows that the same subject would be agent and patient in the same respect and that the same thing is the cause of acting and receiving action [*patior*] in respect to the same thing, at least in the case of separate substances which do not have a part outside of a part [which are indivisible]. Whence the very substance of an angel, because it is indivisible, is in the same respect the effective cause and the receptive [*receptiva*] cause of its proper passion, which seems unsuitable. To understand this, it should be known that just as a thing is disposed [*se* *habeo*] in receiving [*patior*], so it is disposed in the same way in acting. Now in receiving [*patior*], not only that which receives [*recipio*] another is said to be passively disposed, but also that which disposes it for this reception. For example, the wax which receives a figure is said to be passively disposed toward the figure, and not only is the wax passively disposed in respect to the figure, but also the softness disposing the wax for such reception is passively disposed in respect to the figure. For although the softness is not in that in which the figure is received as in that which is the cause [*ratio*] of the receiving, nevertheless the disposition [*dispositio*] is in some way the cause of the receiving [*suscipio*].

So also the principle originating anything produces something in a certain order and by a certain necessary connection by means of some other thing. Also that which produces is disposed actively in respect to that which is produced, as the nail fastening a beam if motion should always be given the beam by means of the nail, although the whole motion is effectively from the man moving both of them, namely the beam and the nail, nevertheless the nail is disposed actively to the motion in respect of the beam. Thus a subject is disposed in its own way in respect to its proper passion, for the subject is like the nail, the passion is like the beam, the one generating is like the one moving both, and the giving of being to both, namely, to the subject and to the passion, is like the motion in the nail and in the beam [which] is caused by the one moving. And thus both opinions are saved and every doubt is removed.

Therefore, from what has been said, two particulars of the definition of property can be clear, namely, that a property belongs to everything and always. For if a property has a necessary and natural connection to a specific form, as has been said [59A-30*], it is necessary that it be found in every thing in which the specific form exists. But the specific form is found in every individual of the same species. Therefore, the property is appropriate to every thing contained under the species and always belongs to it as long as it participates in that specific form. And thus the two particulars of the definition of property are evident, and so forth.

CHAPTER VII

THAT A PROPERTY BELONGS TO A SINGLE SPECIES AND IS PREDICATED CONVERSELY OF THAT SPECIES

And in order to see another particular of the definition of property, namely, how it belongs to a single species, it should be known, as has been said above [56A-14*], that there are different degrees of perfection in beings which the Philosopher, in Book VIII of the *Metaphysics*,[1] compares to numbers, whence he says that the species of things are like numbers. And therefore, as numbers in respect of unity have different formal degrees, as the degree of fourfold is other than that of fivefold, and so also for the others, so there are different formal degrees of the species of things in respect to any simple [*incompositus*] first principle. Nor are there to be found any two species in the same degree as there are no two numbers differing in species. Therefore, in each species there is one specific form in no way existing in the degree of being or of operating of the specific form of another species. Now since, as has been said [59A-30*], a property follows from the proper principles of a species, it can only be in one species [and] on account of this it is said in the definition that it belongs to one [species].

Now it should be known that, although a property taken strictly belongs only to the one most special species, nevertheless in a wider sense nothing prohibits a property from also belonging to a subaltern species which, of course, can be a genus. For we say that a property of a triangle is to have three angles equal to two right angles, and yet the triangle contains many species under itself.

From what has been said, what Porphyry says is clear: that a property belongs to a species first and afterwards to individuals, and the opposite is true of a common accident. For if a property concerns [respicio] individuals insofar as they participate in a specific form, therefore it is verified first of the species which it primarily concerns before [being verified] of individuals, and consequently it belongs to the individuals because it belongs to the species. But, since an accident does not concern the subject except by reason of inherence, and it is primarily appropriate that it be present in individuals rather than in second substances as will be said below [63B-56*], therefore, the accident belongs to a species by reason of an individual. Hence, this particular is placed in the definition of property, namely, that it is predicated conversely of the thing.

It should be noted here that, as will be said below,[2] to be predicated essentially [per se] differs in some way from to be predicated primarily [primo]. For those things are predicated essentially which have a necessary connection with the subjects of which they are predicated, but those things are predicated primarily which are predicated in the aforesaid way and the predicate encompasses as much as the subject. Whence, although risible may be predicated essentially of Socrates, nevertheless [it is] not [predicated] primarily [of him]. Since a property, as has been said [59B-34*], concerns a species prior to individuals and since a property is coextensive with a species, therefore it is said to be predicated primarily or conversely of the species.

It should be noted that although a property belongs to one species, nevertheless nothing prohibits a property of one species from belonging to many other species by participation; for instance, it is a property of fire to be hot and nevertheless, this belongs to many other species insofar as they participate in this by fire.

It should be known also that a property of any species is taken sometimes under one name and in one signification, as risible is a property of man, but other times [it is taken] under two opposites by disjunction, as it is a property of number that it be even or odd.

And thus it is evident about property, and so forth.

CHAPTER VIII

ON THE ORIGIN OF ACCIDENT AND A DESCRIPTION OF IT

But an accident is that which may belong [contingit inesse] to something and may not belong to it without the corruption of the subject.[1] And in order to understand this it should be known that one thing can depend on another in two ways. In one way, as on that which is prior to it at least by nature, and in this way one thing depends upon another in four ways because [secundum quod] there are four causes; for instance, in man the body depends upon the soul as on a form, and the soul upon the body as on matter, and the man upon God as on an efficient cause and upon beatitude as on a final cause. In another way the dependence of one thing upon another can be as upon that which is related to it consecutively, as a body depends on a figure and a line on straightness or curvature, for no body can be found in which there is not a figure nor a line which is not straight or curved; and in this way every subject depends on a proper passion.

Whence whatever dependence there may be in things, whether causal or consecutive, and [if] one thing so depends upon another that its being can be preserved neither in act nor in aptitude without such a thing, it is certain that that thing cannot be understood to be without that on which it so depends, for instance, matter cannot be understood to be without a form. Note here that to understand something without another can happen in two ways: in one way in the first operation of the intellect, namely, that in which the intellect understands only the signification [*significatus*] of a term; and in another way in the second operation of the intellect in which it understands by composition and division through being or through non-being, as when I understand Peter to be or not to be white. Now in the first intellective act I can understand a body without a figure and every subject without a proper passion, for figure is not of the essence of body since body is in the genus of quantity while figure is in the genus of quality. And therefore, the intellect can understand a body without understanding a figure, nevertheless it cannot understand a body in this way without understanding a continuity because continuity is of the essence of body.

But in the second operation of the intellect I cannot understand a body to be without a figure, since a body can never be without a figure, nor a subject without a proper passion, as has been said [59A-30*]. But since a subject does not have such a dependence upon a common accident (for it does not necessarily follow the subject as a figure follows the essential principles of body; for if a body exists, then it necessarily has the position of parts in a whole, as will be said below,[2] since position is a difference of quantity and from this figure follows necessarily, which does not happen with a common accident in respect to its subject), therefore the subject can be understood without understanding the common accident, and it can be understood to be without understanding the common accident.

But it cannot be understood to be without a proper accident, since there can be no existence without the proper accident, for if the figure were taken away, there would be no position [situatio] of parts and consequently there would be no body. Therefore, it will not be able to be understood without it. Therefore, an accident can belong and not belong without the corruption of the subject, since the being of the subject does not depend in any way upon its being, as has been said [60B-37*,38*]. And thus the aforesaid description of accident is clear.

Nevertheless, it should be known that some common accident can be found which is so related in respect to this singular subject that it is caused by its essential principles, for instance, the blackness of the crow, which is caused necessarily by this or that signate matter of the crow. Therefore, in discussing such an accident, I say that this subject cannot be understood to be without it. And this is called an inseparable accident because it is so related to a singular principle as a proper accident to a principle of a species. And since signate matter is beyond the comprehension of a species (for possessing humanity is within the comprehension of man and nothing more. However, whether such a possessor is this designated thing or that is not an explanation of the comprehension of man, as differences are outside the comprehension of a genus, as has been said above [57B-22*; 58B-25*]), therefore the crow can be understood whether there be a species of crow without blackness or also one with whiteness. And on account of this the inseparable accident is grouped with the common accident and not with the proper accident, although in some way it agrees with both, as has been said [60B-37*,38*]. So, therefore, a certain kind of accident is inseparable and a certain kind is separable. The definition of accident given above, namely, that the subject can be understood to be without it, is adequate for the inseparable accident if the subject is taken as a species, and not as a singular thing.

Now it should be known that, although the subject can be separated from any accident, as has been said [60B-39*], nevertheless an accident cannot be separated from a subject actually or aptitudinally [*actu vel aptitudine*]. And I mean by aptitudinally, for instance, although God can separate some accident from a subject, as is commonly held about the accidents of the consecrated host, nevertheless it is impossible that those accidents have no aptitude [disposition] toward the subject. For what is of the proper concept [*ratio*] of anything cannot be separated from it. But it is of the proper concept of an accident to belong to a subject in act or in aptitude, because the being of an accident is to belong [*inesse*]. Therefore it cannot be separated from it. And this can be seen from what was said above about species.[3] For, since accidents and all substantial forms are not pure act, which is not able to be multiplied of itself, if they themselves are multiplied in number, this is because of the potentiality which they have essentially, namely, as they are a real part of some composite, either substantial or accidental. Whence, as matter and form are substantial parts of a thing, so accidents are accidental parts of a thing, as whiteness which is a part of this composite which is a white man. And since all accidents are such, therefore they must belong necessarily to a subject actually or aptitudinally.

And thus it is clear about accident and about the five predicables.

TREATISE II

ON THE CATEGORIES WHICH ARE CALLED THE GENERA OF THINGS, AND FIRST ON THE CATEGORY OF SUBSTANCE

CHAPTER I

ON THE DIVERSE MODES OF PREDICATION

Now we must speak about the categories. And since category means a certain predicable ordered in a predicamental order, it must be seen in what ways predication is made.[1] Here note that one thing is said to be predicated of another in three ways, that is, univocally, equivocally and derivatively.[2]

Those things are said to be predicated univocally which agree with those things about which they are predicated not only as to [their] name, but also as to the nature [_ratio_][3] of [their] essences. And here I mean by nature that which is expressed or signified through a definition or through something which is taken in place of a definition. For instance, animal is predicated of man and the ox, whence not only this name, animal, but also the essential definition of it, which is a sentient animate[4] body, belongs to man and to the ox. Indeed, not only do we say truly that man is an animal, but also that man is a sentient animate body, and the same is true for the ox.

But those things are said to be predicated equivocally which are predicated of many things according to the same name, yet not according to the same nature, and in this way dog is predicated of a barking dog and of a sea animal. For although "dog" is predicated of both according to the same name, nevertheless it belongs to the barking dog rather than to the sea animal by another nature. For the nature of the barking dog is that it is an animal able to walk on four feet, which does not apply to the sea animal.[5]

Now it should be known that analogous terms [analoga] are comprehended under equivocal terms [equivoca]. For analogous terms are predicated of many things insofar as they are meant in reference to one thing [in quantum dicuntur ad unum]. For instance, healthy is said first and properly of animals, for health is an equilibrium among the fluids, which cannot be except in animals. Nevertheless, healthy is said of the urine and of medicine. Indeed, we say that this urine is healthy because it is a sign of the health which is in the animal, and that this medicine is healthy because it is a cause of the health which is in an animal. Whence, although the word [nomen] "healthy" is said of an animal and of the urine, still the nature of health cannot be said of the urine, for the urine is not an equilibrium among the fluids, but it is the sign of such an equilibrium. And thus analogical predication agrees in some way with equivocal predication and in some way with univocal predication. For although the healthy which is said of the urine does not refer [dico] to its nature, namely, an equilibrium of the fluids, yet in [reference to] the urine it does not refer to any other nature, but it refers to the same equilibrium of the fluids of which the urine is a sign.

But those things are said to be predicated derivatively[6] which in the concrete are adjectives and are named or derived from certain accidents taken abstractly. For instance, white is predicated derivatively of a man and of a horse, since white is derived from this abstract thing which is the whiteness which is in the man [and] which taken in the abstract cannot be predicated of the man, for no part can be predicated of the whole, as was said above [57B-21*]. For whiteness is a certain accidental part of a white man and thus it cannot be predicated of him. But he is discerned and called white because he is what possesses whiteness, and in this way it can be predicated of man.[7]

To understand the categories it should be known that category or most general genus can be taken [*accipio*] in two ways: in one way as the predicamental intention itself, or universally;[8] and in another way as the thing itself in which such an intention has been grounded, as has been said [54B, 55A-6*; 55B-9*,10*]. In the first way a category is a being of reason and in the second way it is a real being.

And for a greater knowledge of these things it should be known that being in its greatest universality is divided, in Book V of the *Metaphysics*,[9] into accidental being [*ens per accidens*] and essential being [*ens per se*]. Accidental being is divided into as many modes as there are modes in which something is predicated accidentally, which was discussed above [Tr.I, Ch.8]. Essential being is divided because a certain kind is in the mind [anima] and a certain kind is outside the mind. And in order to know what a being in the mind is, note that something can be in the mind in three ways. In one way, effectively, as we say that an arch is in the mind of the builder before it is built. In another way, subjectively, as we say that knowledge or an act of understanding or a word is in the mind, which things are in the mind as an accident is in a subject. In the third way, something is said to be in the mind objectively, as a tree which is understood is said to be in the mind objectively. In the first two ways the being in the mind is a real being, and I mean by real, not as this word _res_ is derived from _reor_, _reris_ [to think], but as it is derived rom _ratus_, _rata_, _ratum_, that is, firm [established, certain, valid].

In being taken in the third way, namely, as it is objectively in the mind, we can consider two things in it, namely, that which is objectively in the intellect [intellectus], for example, a tree, and this is still a thing; or that which belongs to the tree only as it is objectively in the intellect and does not belong to it according to its real being, namely, a being abstracted from this and from that tree, and in this way a being in the mind is not a thing, but an intention to which nothing outside the mind corresponds except as a remote ground, and thus being is attributed to a non-being. For we say that blindness is in the eye, but since blindness is not a being, how therefore does it have being, since we say that blindness is? Certainly [it has] only the being of an intention which has nothing to do with real being, but on the contrary is divided from it. And if it should be asked of such a being where it is subjectively, it is said that it is nowhere. For if it should be in something subjectively, it would be an accident and consequently a real being, but it only has being objectively.

Now real being is divided into ten categories which are the ten genera of things. And since a thing is the ground of an intention, although remote, according to this double division, the categories can be taken in two ways. And in order to understand the categories it is necessary to divide real being. Note here that, although being cannot be a genus, since no difference is found limiting it [*contraho*], nevertheless it is limited through modes of being. And the mode of being of anything can be taken in two ways. In one way, as it is the real property of some other thing really different from it, as when we say of somebody, he is in a good mood, because he is gentle or agreeable. And it is evident that gentleness and agreeableness, which we call moods, are things different from him to whom they belong. In the second way, the thing conceived is said to be a mode, in one way in respect to its own self, and in another way as it is conceived.

But the different ways of considering it are not taken from differences existing in the thing, but from a disposition to different things, under which disposition the thing is understood. For example, substance, as the subject of accidents, is signified through the mode of substance, since substance is derived from *substando* [stand under, support]. And since it depends on nothing prior which supports it, it is signified by substantial being. And these modes are the very same thing as substance, differing only by reason of the mind conceiving it according to diverse dispositions. This reason is not imaginary, but is drawn from the thing, for it is thus in the thing, for substance supports accidents and is supported by no other thing. Nevertheless, these are not two different things, but the distinction between them is only in the reason. Whence such modes are real being, namely, substance, which supports accidents and is supported by no other thing. Nevertheless the distinction between them is from reason.

Now being is limited by modes, not that a mode is some difference limiting it, but because in real being, commonly taken, some beings are found having among themselves different modes of being to which one and the same thing does not correspond, unless perhaps being itself in an universal. Now the first modes in which being is limited are essential being and accidental being. However essential being is the mode of the category of substance, but accidental being is the mode of the nine other categories. Yet in another way being is limited by two modes, of which one is being for itself [esse ad se], and this mode comprises the three absolute categories, namely, substance, quantity, and quality. The second mode is being for another [esse ad aliud], and this mode comprises seven respective categories, namely, relation, action, passion, time, place, position, and habiliment [habere]. How all these differ among themselves will be discussed below.

Now it should be noted that the division of being into ten categories is not a univocal division, but an analogous one, Indeed, being is said analogously of them for it is said primarily of substance in which its reality is preserved to the greatest extent, while it is said of the others insofar as they are something [belonging to] substance itself. For quantity is extended matter, or the extension of substance; while quality is an affection of it, that is, a disposition; and likewise for the others. Whence being is predicated of them as healthy is predicated of an animal, of the urine and of a medicine. Therefore, being is divided into ten categories, which are substance, quantity, quality, relation, action, passion, time, place, position, and habiliment or possession [habitus], of which we must speak one by one, and first about substance.

CHAPTER II

WHAT SUBSTANCE IS ACCORDING TO LOGICAL INTENTION

Now a substance is a being existing by itself [an existing essential being] [ens per se existens].[1] In order to see the particulars of this description it should be known that, although many things have been said about being, nevertheless being is that which occurs first to our intellect. For we are rational, that is, discursive. Indeed, whatever we understand, we usually understand with discursive [reasoning]. Now things first occur to our intellect rather confused for we are reduced from potency to act through a middle, namely, through an imperfect act by which the intellect does not understand a determinate thing, and by reasoning it determines itself to perfection insofar as it is possible for the thing to be understood. For instance, in Book I of the Physics,[2] the Philosopher gives an example in regard to sensible things; for in seeing something at a great distance, I first perceive that it is a body; then by approaching, I see that it is an animal; then I know that it is a man; and then that it is Peter. Thus our intellect moves discursively [discurrit] in understanding.[3] For, concerning a thing, it first conceives that it is a being, then that it is a substance, then that it is a body, and so on all the way to the most special species. However, what can be understood very confusedly is being. Therefore, being is that which occurs first to our intellect. And thus it is clear how being is taken in the aforesaid explanation of substance.

But since it was said [62A-47*] that a substance is an essential being [ens per se], it should be noted that essential [per se] is divided against accidental [per accidens]. For instance, we say that a man is essentially an animal and that he is accidentally white. And essential [per se] is now taken here in this way, for quantity and quality are not accidental beings, but essential, as has been said [61B-45*,46*], since essential[real] being is divided into ten categories.

In another way, being by itself [ens per se] is divided against being in another [esse in alio]. In the second way it belongs only to substance to be by itself [esse per se], and this is its own proper mode. Or it can be said that a substance is a being existing by itself because to exist belongs to it properly, but to exist through it belongs to accidents. For instance, fire is hot in itself [per se], for it is its property to be hot, since all things are hot through it.

Nevertheless, it should be known that substance is divided into matter, form and the composite, for matter is not properly said to be by itself since it has being only through a form, and likewsie a form is not said to be by itself since it has being only in matter. However, the composite is properly said to be by itself, and I mean by the composite, namely, the whole made from its parts. For although the integral parts are put together, nevertheless they are not properly said to be by themselves for the composite is directly in a category, as Boethius says in his commentary On the Categories. But it is also proper to say that the form and the matter and the composite are [exist] by themselves since they are not in another, as an accident is in a subject.

It should be noted that, although composite substance is described here, still a composite substance can be in two ways, namely, as a nature and as a supposit. And here I mean a nature, such as humanity is. But I do not take a supposit here as a singular in the genus of substance but as a concrete nature, such as man. For although humanity is called a form, nevertheless it is composed of matter and form, as was said above [55B-10*,11*], for humanity refers to body and soul. Thus humanity or any other nature whatever refers to a substantial form and to matter since in its principle signification it prescinds from everything other than the aforesaid form and matter. However, it is not so for the supposit, which is man; for man in its principle signification means having humanity or having that form and matter to which humanity refers. And since that which has humanity can be a non-human supposit, as is evident of the humanity of Christ which is supported by the divine supposit, or can have some other things, for example, accidents, from which humanity prescinds entirely, therefore a nature and a supposit are different in creatures. And since a nature, for instance, humanity, is what is possessed existing in the possessor, nevertheless being in itself [*ens per se*] does not properly belong to it. Therefore a composite substance which is a supposit is properly called a being in itself [*ens per se*]. And this is the reason why the genera and species of substance, but not of the other categories, are taken in the concrete and not in the abstract. And the substantial form which is part of a composite does not support accidents by itself, but the composite does. But the form which is the nature or essence, such as humanity, although it may be composed of matter and form, nevertheless prescinds in its signification from supporting accidents. But the other accidents are so disposed that their genera and species are forms, although there is not one thing by itself from their [union] with a subject.

And afterwards it is said that it exists. Note here that in creatures the being of essence and the being of actual existence are really different, as two diverse things, which is evident thus. For that which is outside the essence of something really differs from it. But the being of actual existence is outside the essence of a thing, for the definition indicates the entire essence of the thing. But the being of actual existence is outside the definition, since only the genus and difference are given in the definition and no mention is made of whether the thing defined exists or does not exist. And this is manifestly apparent. For it is impossible to understand anything without understanding those things which belong to its essence. Nevertheless, it is evident that I can understand [what a] rose [is] without understanding whether it actually is or not. Therefore, being in act [*esse in actu*] or the being of actual existence differs really from essence. Whence in respect to the first, there is a composition of being and essence in each created substance which is not a composition of matter and form, but is a composition of the two principles of the supposit, of which essence is the potency and being is the act. Whence being is called an accident in respect to an accident since it is outside the essence of the thing. And it is called a substance since it is in the genus of substance as a principle of the supposit. And it is an act absolutely [*simpliciter*] because it is in the genus of substance, although it is not the form which is the act of matter. And it is an act in respect to something [*secundum quid*] since the essence in which it is present is not a pure potency, as pure matter is.

Nevertheless, it should be known that the being of essence belongs primarily to the species since only the species is defined, as was said above [63A-53*], and the definition signifies the being of the essence, and afterwards it is said of the individual or applies to it. However, the being of existence belongs primarily to individuals, for if the being of individuals is taken away it is impossible for anything else to remain, as the Philosopher says in the book, On The Categories,[4] and afterwards it belongs to the species. Whence to exist is said of genus and species as of common accidents, for it is said thus: a man exists, since Peter exists, just as, a man runs, since Peter runs.

CHAPTER III

WHAT FIRST AND SECOND SUBSTANCE ARE AND THE ORDER OF SUBSTANCE

Now substance is divided into first and second substance. But it is first substance which is principally, properly, and especially said to support [substare],[1] [and] which is neither in a subject nor said of a subject. And in order to see this description it should be known that support is said in two ways: namely, to support accidents, as when we say that a substance supports accidents; and to support universals, as when we say that the less universal supports the more universal, for it stands under it in the predicamental order, whence the more universal is predicated of the less universal. If support is taken in the first way, then first substance properly supports, for, as has been said above [62B-50*], that is in something properly which is in it through itself [per se] and not through another, as heat is properly in fire. Thus, in the same way it belongs to first substance to support accidents. For, although a surface supports color and a line curvature, they do not support [them] through themselves [per se], but through another, namely, through a first substance. For if the inherence of a surface and a line, which they have in a first substance actually and aptitudinally, be removed, there will be neither a surface nor a line. Therefore, they support accidents since a first substance supports them.

Therefore, it is proper to first substance to support accidents. From which it follows that to support accidents belongs principally and primarily to first substance. For that belongs primarily to something which belongs to it [through itself],[2] and not through another. For it does not belong primarily to Peter to be risible because it belongs to him through another, namely, through [being a] man. Whence it primarily belongs to man to be risible. Thus, although to support accidents belongs to first and second substances, nevertheless it belongs to second substances, namely, genera and species, secondarily, since it belongs to them through individuals which are first substances; for a man does not run unless Peter or Socrates runs. And thus it is evident how first substance supports [accidents] properly and principally.

But it is said that it especially supports [them], and support is taken in the second way, namely, to be under another, as the less universal is under the more universal. And since first substances are placed under[3] all the species and genera which are above them, while the species and genera are not under so many, therefore, in this way first substances are said to support especially with respect to second substances.

Afterwards it is said that they are not said of a subject, since they are not predicable of others, as [are] the species and genera, and they are not in a subject since they are not accidents. For only accidents are in a subject as being in a subject is taken here. And thus the description of first substance is clear.

But second substances, which are in the category of substance, are called species and genera. But differences, which fall to one side, are not properly called substances since they are not properly said to be in a category, unless, perhaps, by reduction. And they are called second substances since, as has been said [63B-56*], they support accidents secondarily. Now among the second substances the species are more properly said to be substance than the genera, not because substance is susceptible of more and less, as will be said below,[4] but because in each way of supporting, the species supports more than the genera, as can be understood from what has been said. But the most special species are equally called substances, since they equally support all things. And thus it is clear about the first and second substances.

And how the predicament of substance is ordered is evident in the Tree of Porphyry, which we place here for the sake of an example, although I do not discern it to be entirely true, for rational animal is not a genus, as he makes it, nor are the gods rational, as he says.

CHAPTER IV

THAT SUBSTANCE DOES NOT ADMIT OF CONTRARIETY NOR OF MORE AND LESS, ALTHOUGH IT MAY BE THE SUBJECT OF BOTH THROUGH CHANGES OF ITSELF

Now it remains to speak about the common attributes and properties of substance. Now substance has two attributes in common with some accidents, namely, that it does not admit of contrariety and it does not admit of more and less. For understanding these, it should be known that certain forms have a latitude in themselves while others do not. And since these certain forms have the aforesaid latitude, therefore they have contrariety, although it is not always true for all of them. And to know this latitude it should be noted that in spiritual things [the notion of] augmentation is transferred figuratively from corporeal quantity. Now something is said to be large in corporeal quantity inasmuch as it is brought to the due completeness of quantity. Whence some quantity is considered to be great in a man which is not considered great in an elephant. So also in forms something is said to be great from that which is complete [perfectus]. And the completeness of a form can be considered in two ways: either according to the form itself or according to the participation of the subject. In the first way the form itself is called small or large, as a small [amount of] whiteness. In the second way it is said to be more or less, as more or less white. Therefore, the forms which are indeterminate in themselves, as more or less, or that may be more completely or less completely in a subject, are said to have the aforesaid latitude and the degree [gradus] of intension and remission mentioned above [56A-14*].

Now in order to know which are those forms, note that in a form we can consider three things. First, if an agent can be disposed toward it in diverse ways. Second, if the subject receiving it is sometimes more or less disposed to it. Third, how the form itself is participated in by the subject. Whence those forms, towards which the agent is not disposed in diverse ways nor [towards which] the subject is sometimes more and sometimes less disposed, will not have the aforesaid latitude, but they are always received in the ultimate completeness of the species. For example, if air were always disposed in the same way to the reception of light and that which illuminates the air were always disposed in the same way, then more or less light would never be received in the air, nor would the air be more or less illuminated; but since one or the other of these things is varied, therefore light is disposed in another way. Now since in substantial forms the agent is always disposed in the same way, and the subject, which is prime matter, is always equally disposed, therefore the substantial form will not have the aforesaid latitude.

It is not necessary to prove that prime matter itself is always equally disposed because it is evident. And it is evident about the agent or producer of a substantial form. For although such an agent is disposed in diverse ways by casting off contrary dispositions from matter itself, and does this by virtue of accidental forms or qualities, nevertheless it introduces the substantial form by virtue of its own substantial form which is uniformly disposed to all the generable things of the same species. And in the same way the same thing can be concluded about the proper passions which are produced together with [their] subject, and the subject is actively disposed in some way with respect to them, as was said above [59A-31*,32*]. Therefore substantial forms, like proper passions, do not admit of more and less, both since the agent producing them is not disposed in a diverse way and since the subject receiving them is always disposed in the same way.

But if the subject were not disposed in the same way to the form, or if the agent were not disposed in a diverse way, it would be necessary to consider the third thing which was mentioned, namely, how the form itself is participated in by the subject. For if it is participated in on account of indivisibility, such a form would not admit of more or less, as is evident of the species of numbers which consist in indivisible unity; and of the species of continuous quantity according to numbers, as [a measure of] two cubits, three cubits; and of some other relations, as double and half; and of figures, as three-sided and four-sided. And since all quantities and figures are so received in subjects, therefore quantity and figure and these relations do not admit of more and less.

And not only of quantities considered thus, but of quantity absolutely [simpliciter] speaking, as line, surface, and body, it is true that it does not admit of more and less. The reason for this is that the completeness or incompleteness of a quantity is due to a greater or less extension, according to which something is said to be more or less. But greater or less extension is not a sufficient cause that anything should be called more or less, since it is not said to be on account of its extension, as is evident in the other forms in which there is extension and not intension, as in the forms of inanimate things and of brutes whose forms are extended and they are not spoken of according to more and less.

Therefore, it is evident which forms admit of more and less and which do not, because evidentally those which have the latitude mentioned above admit of more and less. From these things it is known immediately which forms admit contrariety and which do not. For no form which does not admit of more and less admits contrariety. Note here that certain forms which have this latitude have it only while remaining in the same species, but others have it in the genus and in the species. For such degrees of latitude continue to the lowest thing in which that species is preserved, and if this degree goes beyond the form it will change species and will keep itself in the same genus. And in this second species it also has degrees until it reaches the lowest, and if it goes beyond this it will not be in the same species.

For example, [the color] saffron has degrees and it can become more saffron until it reaches and becomes red; and although redness is a species other than saffron, nevertheless they are in the same genus, for they agree in this, which is to participate in the light incorporated [in them]. And from red it goes on to black, even to the ultimate degree of black, which cannot be transcended in the same genus. Also, if the saffron be diminished it becomes pale and afterwards white, and these forms of these two degrees, namely, whiteness and blackness, are contraries.

Note what many moderns hold, that two degrees make one contrariety, namely, whiteness and redness, white and more white; and among them contrariety is of two kinds, namely, complete and incomplete. The first is between the extremes farthest apart, namely, between the most intense whiteness and deepest blackness. The second is between intermediate degrees, since two degrees distinct in number are not compatible mutually and denominatively in the same part of the subject, as a degree like two and a degree like three, and so also of the singulars. Whence such latitude, namely, being more completely and more incompletely participated in by the subject, follows the forms, either by reason of the form or by reason of the subject; by reason of the form as is evident in colors. For light falling upon a body being more or less participated in causes contrary species; for the species which participates more completely in such light, for instance, whiteness, is contrary to the species which participates more incompletely in such light, namely, blackness, and contrariety is found in such things.

But when it does not participate in such latitude by reason of the form but only by reason of the subject, as is evident for what is more or less illuminated, then such a form, although it receives more or less, nevertheless does not have a contrary, for nothing is contrary to light and still it is evident that air is sometimes more and sometimes less illuminated. For wherever there is contrariety there is more and less, and the latitude in forms mentioned above; but wherever there is no such latitude there is no true contrariety. And I say true contrariety, since certain things are called contraries which are opposed on account of possession and privation, as rational and irrational, equal and unequal, as we say, and in one and the same genus there is one prime contrariety, which is not truly a contrariety but is more a possession and privation.

And I say the same thing about all the immediate contraries, namely, that they are not opposed in truth contrarily although they are [designate] a possession and privation; for it is thus that health and sickness are opposed, for health is an equilibrium of the fluids and sickness a disequilibrium. And since equal and unequal are opposed privatively, it would be better to say that health and sickness are opposed by way of possession and privation than contrarily, and this is the reason they are said not to have a mean. And it should be known that although, as has been said, latitude and degrees are found in some things, nevertheless it is not to be understood that when one form is intensified that it be augmented by the addition of degree to degree, so that there are here two distinct degrees, of which one is added to the other and can be designated distinctly from it. But such an augmentation is made insofar as an incomplete form is made complete; so that the complete form itself has more than before, not on account of diverse designatable parts, but virtually, so that the first degree is contained virtually in the second degree as the incomplete is contained in the complete degree.

From these things it is evident that, since substance does not admit of more or less, as has been said [64B,65A-58*,59*], there is nothing contrary to substance. And so the common properties of substance are evident.

But it is a property of substance that it should admit of contraries on account of a change in itself. And this is said to be the property of substance since it belongs to it alone essentially [per se], and if other things are said to admit of contraries, as a line is said to be straight or curved, nevertheless the line does not admit of this except by reason of substance. Also the instance of a statement and an opinion is given which, while remaining the same, at one time is true and at another time is false. To which the Philosopher replies[1] that this does not happen because of a change of the statement or opinion, for neither the statement nor the opinion is changed while Socrates is seated, but by his rising up the thing is changed; for the statement or opinion is said to admit of contraries, not through a change of itself, but through a change of the thing signified. Therefore it belongs to substance only to be of this kind, and if it belongs to other things to be of this kind, it is by reason of the substance in which they have [their] being, as is evident of the surface which admits of whiteness and blackness, whose nature it is to be in a substance actually or aptitudinally, as was said above [60B-39*].

And thus it is evident about the category of substance, and so forth.

ABOUT THE CATEGORY OF QUANTITY[1]

CHAPTER V

ABOUT NUMBER WHICH IS DISCRETE QUANTITY[2]

Quantity is divided into continuous and discrete.[3] Now that quantity is called discrete whose parts are so related among themselves that they are separate and they are not joined to one common boundary. For the parts of the number which is ten are joined to no common boundary; for in the number which is ten no part is found to which the other parts are joined, since all of its parts are separate, one from another. But that quantity is called continuous whose parts are joined to one common boundary, since all are joined together and they are not actually separate, but are separable as will be said below.[4]

Now discrete quantity is divided into number and speech [oratio].[5] And number is a multitude gathered together from units. Number however, is defined in another way, thus: number is a multitude measured by unity [per unum]. Now in order to see the said definitions it should be known that one is convertible with being and one is the principle [beginning] of number. But one taken in the first way is nothing other than an indivisible being. However, one adds to [the idea of] being [the idea of] the negation or privation of division. And since every being is one taken in this way, therefore one so taken is not only in the genus of quantity but in all genera as being is, and therefore one is a transcendental. And a multitude caused by one taken in this way is not the number which is in the species of quantity, but is a transcendental; for we say that there are four angels, or three persons in the divine being, and nevertheless there is quantity neither in the angels nor in God.

The one which is the principle of number however, does not add something to the one which is convertible with being, but concerns it by adding two concepts [ratio] to itself; namely, since it does not mean every indivision, that is, it does not mean every being insofar as it is indivisible, but it means an indivisible being of continuous quantity and it means a concept of discrete measure. For because number, which is a species of quantity, is caused by a division of the continuum, let it be supposed that we divide one line into many parts; since each part of the line which is thus divided is undivided, the line so considered is one; whence one is nothing other than an undivided continuum. Therefore the one which is convertible with being means an undivided being, whatever that may be. But the one which is the principle of number means an undivided continuum and number is gathered together from such units where there are many continua divided from one another and undivided in themselves.

The second concept, which the one which is the principle of number adds on to the one which is convertible with being, is the concept of discrete measure. Note here that to be measured discretely can be taken in two ways. In one way that it be the same as what is made certain to the intellect [about] how many things there are, inasmuch as someone by units repeated many times is made certain of the number of those things which he counts; and taken in this way measure is an accidental property of number itself, and it also belongs to the one which is converted with being. To measure is taken in another way for what makes things many formally, as whiteness formally makes a thing white, and such a measure is of the concept of one or of number. Therefore we have that which is one, from whose addition number is made, and how it is a measure essentially or accidentally.

And in order to see what a multitude is, it should be known that, as has been said above [62B-49*], the first thing which our intellect understands is being. But the second thing it understands is the negation of being, as something is understood not to be this being. From these two it immediately understands division, whence division is a distinction through being and non-being. Thirdly, it understands the one which [precludes] division, for that is one being in which there is not the division mentioned above; and thus the understanding of one is posterior to the understanding of division, as the understanding of privation is posterior to the understanding of the possession which is lacking. Fourthly, it understands multitude which means two negations of which one is that this is not that and the other is that each of them is not divided and consequently is one. And, on account of this, multitude is defined by means of one, since nothing is called many unless each of them is one or an undivided being. And as we have now taken being and division, both the one and the many, in the transcendentals, so let it be taken in quantity, so that as being was taken, so let the continuum be taken here; although there is some difference between them, as was said above [66B-67*] . It should be known that this multitude which is in quantity is many continua of which one is not the other; and each of them is undivided in itself, or one, which is the same thing. And thus it is clear about the first definition of number, namely, number is a multitude collected from units.

It is also clear about the second definition, namely, number is a multitude measured by unity; for since unity repeatedly multiplied causes a multitude, we are made certain by this how large a discrete multitude is, and thus unity is the measure of multitude, and it is clear about number and so forth.

CHAPTER VI

ABOUT THE SECOND SPECIES OF DISCRETE QUANTITY, NAMELY, ABOUT SPEECH[1]

Speech is an utterance [vox] composed of distinct syllables measuring it and not having permanence in its parts. Now to understand this definition it should be known that the vocal sound [vox] is not taken here as a quality, for the vocal sound is in the third species of quality, as will be evident below,[2] but as something which flows in the voice [vox]; since in such an utterance there are many words and syllables which, although they are indivisible, nevertheless are successive, for one succeeds the other. Whence in such syllables there are two things to consider, namely, their indivisibility and their succession. However, such indivisibility is not the indivisibility of unity, otherwise speech would be number; but is the indivisibility measuring duration, according to which several indivisible syllables last longer than one. Whence if we consider the indivisibility of syllables in speech, it agrees in this with number. But if the measure of duration, which nevertheless is not always constant but is successive, is considered there, then in this it is like time which is successive measure and of successive things, as will be clear below.[3] Nevertheless, speech is not simply number, but is number pertaining to the measure of duration; nor is time a continuum because it is nothing other than a continued succession always divisible; but it [speech] is the succession of some indivisible things, namely, syllables.

Now it should be known that the Philosopher says in the book On the Categories that speech is measured by long and short syllables.[4] Another text holds that long and short syllables are measured by speech. However, speech is measured by the syllable in that way, as has been said [67A-70*], that number is measured by unity which is indivisible as such. Likewise also, speech is measured by the syllable, which is indivisible, as has been said before [67A-70*].

And in that which is said that such a syllable is short or long, it must not be understood that such brevity or length pertains to continuous time so that, for example, speech would be composed of many continuous times, otherwise it would not be a species different from time, for the parts of time do not make a species different from time. But continuous time sometimes coexists with the indivisible duration of a syllable or it exists with it at the same time because time is sometimes short and sometimes long; whence continuous time is the measure of successive things which are in motion. But syllables exist in a certain indivisible thing, and without motion, although they may be with change and succession, still under some measure as has been said [67B-71*]. Whence the measure which is time and the measure which is of the syllable itself, although they are diverse measures of duration or of durability, nevertheless can exist simultaneously. And thus the syllable is called short or long, not from the continuous length or brevity which is in it, since it is indivisible, but from the length and brevity of the continuous time which coexists with it.

Some say nevertheless, that although the syllables are not motion, they are nevertheless made by motion. And since all motion is measured by continuous time, for this reason syllables are called long or short from the length or brevity of the continuous time measuring the motion through which the syllables are made. Others speak differently about speech. For, according to them, since number is caused by a division of the continuum and nothing adds to the continuum unless [it be] a division in which each thing is undivided, and nevertheless it is another species of quantity than continuous, so it is for speech with respect to time. For speech is many divided times of which each is undivided, and nevertheless it is a species different from time. And so it is clear about discrete quantity and so forth.

CHAPTER VII

ABOUT CONTINUOUS QUANTITY IN COMMON ACCORDING TO LOGICAL INTENTION[1]

But that quantity is continuous whose parts are joined at one common boundary. It should be noted that some understand this thus, namely, that the parts of a continuum are joined at one common boundary. For example, the parts of a line are terminated at one point which actually terminates it and not at a point in potency. Likewise, the parts of a surface are joined at the line which actually terminates it, and the parts of a body at the surface bounding it.

To understand this it should be known that we must imagine a point which is indivisible in a line to be moved, and by its motion cause a line, and the line moved to cause a surface, and the surface moved to cause a body and the present moment [nunc] moved to cause time. Which things having been caused and imagined thus, although it is really not so, we understand this definition, for if the moved point causes the line, then all the parts of the line are joined by the point. And since, according to this way, one can imagine in every part of the line a point at which another particle without any other division[2] is continuously joined; therefore, the line is said to be continuous. In the same way there is a relation of the surface in respect to the line by whose motion we were imagining it to have been caused, as has been said [67B-73*]. For its parts are continuous through the line and at the line. Also the body is related likewise in respect to the surface. And since a place is a certain kind of surface, it has a common boundary of its parts in the same way as a surface.

It should nevertheless be known that the Philosopher says in the book On the Categories,[3] that the parts of a place are joined at the same boundary at which the parts of a body are joined; which is not understood well if the place be the surface of a containing body. For, since the common boundary of the parts of a body is the surface, it follows that the boundary of a place is the surface and so a surface will be the boundary of a surface. Note here that place can be considered in two ways. In one way, as the surface of a containing body, and then the boundary of its parts is called a line, as has been said [67B-74*]. Place is taken in another way for the entire locating body, as air is said to be the place of water, and fire the place of air, and in this way the Philosopher says that the parts of a place are joined at the same boundary as that at which the parts of a body are joined. But the parts of time are joined to the present moment. And so it is clear about the definition of continuous quantity.

CHAPTER VIII

ABOUT QUANTITY HAVING POSITION AND ABOUT THE REQUISITES FOR THE SAME

Now continuous quantity has position [*positio*], although not every one [has it]. It should be noted that position is the same as the order of parts in place, and this is one of the ten categories which is also called position [*situs*], which will be spoken about later.[1] In another way, position is said to be the order of parts in a whole, and thus position is a difference of quantity.

And three things are required in order that quantity have position. First that it have its continuous parts designatable and not designated. Second, that according to this designatability it have parts ordered among themselves, namely one after another. Third, that those parts have permanence. By reason of the first, number, which has its parts not designatable but designated, however it may have them ordered, for instance, two after one and three after two and so for the others, does not have position. By reason of the third, although time may have continuous parts designatable and not designated and ordered, nevertheless since it does not have them permanently, therefore they do not have position among themselves. But speech has its parts neither continuous nor permanent, as has been said [67A,B-70*,71*], therefore it does not have position among its parts.

Therefore, the species of quantity having position are the line, the surface, the body and the place. And although the point is not a quantity since it is indivisible and is the principle of quantity, since it is the principle of the line, nevertheless, since it has a relationship [*ordo*] to the parts of the line, it is said to have position. For it is commonly said that a point is an indivisible thing having position, since it is the end of the prior part and the beginning of the posterior. But unity is an indivisible thing not having position; and so it is clear which quantity has position and which has not.

CHAPTER IX

ABOUT THE SPECIES OF CONTINUOUS QUANTITY AND FIRST ABOUT THE LINE

Now we must speak about the species of continuous quantity mentioned above, and first about the line. Now the line is a length without breadth and depth whose extremes are two points. In order to understand this it should be known that, since quantity is the measure or the extension of substance, as was said above [62B-48*], corporeal substance as such can be measured or extended in three ways, according to the three ways and no more that diameters can intersect themselves in right angles. For if one diameter is to intersect another at right angles, it is necessary that it be in the manner of a cross, thus. Whence there are two right angles on the upper part and two right angles on the lower part.

And a right angle is said to be that which is caused by the drawing of a line perpendicularly falling upon a straight line, thus. Whence, if such a line falls in the middle, it causes two right angles, as was said. Therefore, we have two diameters intersecting themselves at right angles in the supposed cross. But if a third diameter is to intersect these two diameters in right angles, it must pass through the point where the four right angles are joined. Nor can a fourth diameter intersect the three aforesaid diameters without causing a right angle. Therefore, one diameter of the three mentioned above is called the length, the second the breadth, while the third the depth, and these are called the three dimensions.

Whence, if length is considered without the other two dimensions, then it is called a line. But the ends of a line, if it have ends, which I say on account of the circular line which does not have ends, are two points, for they terminate the line at something indivisible according to that dimension. For, if there were always given something divisible according to that dimension, since a dimension of this kind is a line, as has been said [67B-77*], then the line would never end. But a surface contains two of the dimensions mentioned above, namely, length and breadth, whose ends are two lines or one line, which I say on account of the circular surface which is bounded by one line. For as has been said [68B-78*], just as a line must be terminated at something indivisible according to that dimension, so it is necessary that a surface be terminated at something indivisible according to breadth, and this is a line. However, a body contains all three of the dimensions mentioned above, or the body itself is the same three dimensions, as surface is twofold dimension, and a line one. And a body is bounded at a surface which is indivisible according to depth or at a line which is indivisible according to breadth.

It should be noted that, although a body is a threefold dimension, namely, length, breadth, and depth, nevertheless the concept of a body is constituted from its depth only. Likewise also, although a surface contains two dimensions, namely, length and breadth, nevertheless its specific concept is constituted from breadth only, as the specific concept is constituted from rationality, even though man is sentient and living. But the concept of brute is constituted from sentiency, although it is also a living being. But the specific concept of a line is constituted from its length only. And since a continuous quantity has the property that it is always divisible, if a body insofar as it is a body must be terminated at something indivisible, it will be bounded at a surface which, although it is divisible, nevertheless is not so according to depth, in which the specific concept of a body consists, as has been said [68B-79*], and likewise for a surface in respect of a line. And thus it is clear about the three species of continuous quantity.

CHAPTER X

ABOUT PLACE WHICH IS A SPECIES OF CONTINUOUS QUANTITY

What follows is about place. Now place is the immovable surface of a containing body. For although place is a surface, nevertheless it does not follow that place should be in the genus of surface, but it is another genus of quantity because of another additional specific difference, namely, immovable, which neither belongs to surface insofar as it is surface, nor does not belong to it.

It should be known that since there is no vacuum in nature, every body must be surrounded by another body. Let us dismiss now the question of the ultimate sphere. Whence the surface of the body surrounding that which is contiguous to a surrounded body is said to be a place.

And a surface is not called a place for the reason that it surrounds, otherwise a ship which goes with a river, since it is always surrounded by the surface of the same water in that it always goes down [the river] as the water goes down, would be said to be in the same place; which nevertheless is false. Likewise also, a ship tied to the bank of a river, since the surface is always changing because of the flowing of the water, then would always be changing place; which is also false. Therefore, the concept of place is not the concept of surface, nor conversely; but the concept of place consists in the fact that it is immovable, that is, according to the position of the universe. Whence, given that the universe were a vacuum, and that there were only the heavens containing the vacuum and that one stone were in the center, although it would not be surrounded by the surface of a containing body, nevertheless it would still be in place because it would be in a part which, in respect to the universe or heavens, would be immovable. And thus it is evident about place.

CHAPTER XI

ABOUT TIME, HOW IT IS SUCCESSIVE QUANTITY

Now time is the numbered movement of the first movable with respect to prior and posterior. And in order to understand the aforesaid definition, it should be known that number is twofold: namely, that by which we number, as two, three, and the like; and this is the first species of discrete quantity about which we have spoken. The other is the numbered group [numerus numeratus], namely, those things to which we apply that number insofar as they are counted, as two dogs or three lines; and here number is taken in this way.

It should be known that in every motion there is a successive quantity making it formally quantitative by successive quantity, which successive quantity is not motion but its accident. Since, however, the motion of the first movable, namely the ultimate heaven, is the most regular and the simplest of all motions, for this reason its successive quantity is the most regular and the simplest of all other successive quantities. And therefore, by applying this to all other motions which are successive, as has been said [68A-82*], we are made certain of their duration and this is to be measured, as has been said above [66B-68*]. But since the mind considers the prior and the posterior in the succession of the movement of the first movable thing, that succession so numbered or measured by the mind by prior and posterior is said to be time; as we call a day the succession of one part of the movement of the first movable, namely, as its parts are moved from east to west. Whence such a priority in succession, namely, as a part of the first movable is moved in the east, and such a posteriority, namely, as a part is moved in the west, when considered by the mind, constitute what is called time, for instance the day; and so on for others. And by applying this time to all successive things, as has been said [68A-82*], we are made certain about them with respect to their duration in such a succession. Therefore, it is clear how time is the numbered movement, according to prior and posterior.

It should be noted that, as has been said [69A-83*], time is in the movement of the first movable subjectively, as a passion is in its subject, [and] according to those things which are in that movement we say that something else is in time. Whence in time we must consider the movable and the indivisible motion of that thing which is said to have been moved because it is related to the motion as a point to a line. And as in each part of a line one may imagine a point, so in each part of the movement one may consider that it has been changed, for every movement, if it is terminable, is terminated at an accomplished change as at an intrinsic term, as a line at a point. Whence time corresponds to that motion in two ways; both as its passion, because it is its succession, as has been said [69B-83*], and as its measure; for time not only measures other movements, but also the parts of the movement of the first movable, for we say that one revolution is made in one day. But to that changed being itself, which is indivisible in movement, corresponds the present moment in time which is the indivisible of time, or is the same in reality, although it can differ in concept. And in every time it is possible to designate the present moment as a point in a line, and if time were terminated it would certainly terminate at the present moment. Therefore it is clear about time.

CHAPTER XII

THAT QUANTITY NEITHER ADMITS OF MORE AND LESS, NOR DOES IT HAVE CONTRAREITY; BUT WITH RESPECT TO IT SOMETHING IS SAID TO BE EQUAL OR UNEQUAL TO ANOTHER

Now it is common to every quantity that it does not admit of more and less and that it does not admit contrareity.[1] How this is to be understood has been said above [in the chapters] on the category of substance.[2] However, it should be known that an instance of large and small, which [large and small] seem to be in [the category of] quantity and seem to be contraries, is given by the Philosopher in the book, On The Categories.[3] And he answers first that large and small are not in the genus of quantity, although they are passions of quantity itself, but they are in the genus of relation; for something is not said to be large absolutely, otherwise it would not be said that millet is large and a mountain small unless with respect to other millet or with respect to a large mountain. Secondly he answers that, given that large and small were in the genus of quantity, nevertheless they would not be contraries, for the same thing cannot be contrary to itself and nevertheless one and the same quantity is said to be large with respect to a smaller one and small with respect to a larger one.

Now the property of quantity is that equal and unequal are predicated according to it.[4] In order to understand this it should be known that quantity can be taken in two ways, in one way as the magnitude of a mass, in another way as the magnitude of perfection [completeness]. In the first way quantity belongs to this category, since it is the first and more well-known meaning of quantity. In the second way, quantity is one of the transcendentals, since it is found in many genera, as a perfection. For we say, he is a great doctor, that is, a perfect one, and this is a great likeness. And according to quantity taken in either way, equal and unequal are predicated, for we say that two lines are equal and two whitenesses, likewise. And since quantity in the first way is better known and more proper, while in the second way it is used derivitavely from the first, therefore equal and unequal are predicated properly according to quantity taken in the first way.

It should be known that one is convertible with being and thus whatever is a being is one. Now since substance, quantity, and quality are beings, each of them must be one. And since in substance, quantity, and quality there can be many beings, therefore there can be many things of which each is one in them, which are many. Therefore in each of these categories there are one and many. Now the relation which is called identity is grounded in the one in substance; while the relation which is called equality is grounded in the one in quantity; and the relation which is called likeness is grounded in the one in quality; nevertheless in diverse ways. For one is said in three ways: namely, one in number, as Socrates or Plato, for each is one in number essentially [*per se*]; another way is one in species, as Socrates and Plato are one in humanity; another way is one in genus as a man and a horse are one in animality. Identity, however, which is grounded in the one in substance, is not grounded in the one in genus nor in the one in species but in one in number, as if there were two substances. But one in number is identical with itself, as identical [*idem*] is taken now, although even in substance identity can be said to be identical in species and identical in genus, nevertheless it is not taken in this way, whence such an identity is not a real relation but a relation of reason, as will be said below.[5] But equal and similar are not grounded in the one according to number, since nothing is equal or similar to itself; but they are grounded in the one according to species, for two lines are called equal and two whitenesses, similar.

It should be noted that equal and similar are taken commonly, that is, both for the ground of equality and for its term; for equality is of two things, of one fundamentally and of the other as a term, and conversely. But similarity has many terms, for a participation of quality according to the same species suffices for a similarity, for those things which are white are similar and those things which participate in diverse qualities with respect to a species are dissimilar, as white and black. However, it is not thus for equality, for it does not suffice to have equality that there be two qualities of the same species; otherwise all lines which are of the same species would be equal which is false. But it is required that there be two quantities of the same species with a privation of more and less, namely, that one be not greater nor the other less in any way. Indeed, unequal is not taken according to diverse species of quantity, as has been said about the similar in quality [70A-87*,88*], but in those things which are of the same species without a privation of more and less. And thus it is clear what identity is, what equality is, and what similarity is.

It should be known that although the ground of identity is substance as has been said [70B-86*,87*], nevertheless it can be predicated of the other categories and is grounded in them; for we say that this whiteness is identical with itself and this line is identical with itself. And therefore, it is not a property of substance that something is said to be identical or different, since this belongs to the other categories, although it belongs principally to substance. It is a property of quantity, however, that equal or unequal is predicated according to it, since nothing is said to be equal or unequal except according to quantity. But it is a property of quality that similar and dissimilar are said according to it. And thus it is clear about the category of quantity.

ABOUT THE CATEGORY OF QUALITY[1]

CHAPTER XIII

WHAT QUALITY IS IN GENERAL

Now we must discuss the category of quality. And quality is described thus: quality is that in virtue of which we are said to be such [*qualitas est secundum quam quales dicimur*].[2] It should be known that the categories can not be defined, for since the genus and the difference of the defined are placed in the definition, and since the most general genera of which kind are substance, quantity, quality and the like, do not have a genus above them, as has been said above [61A-44*], therefore, they cannot be defined. They can be described or made known to us, however, through other things better known to us.

It must be noted that, as can be gathered from what has been said before [54B-5*,6*], our intellect not only abstracts the universal from particulars but also the form from that which has such a form; for it understands humanity precisely by not understanding with it that which has humanity, namely, a man, in whom there is not only humanity but also many other entities, for example, whiteness and the like. In the same way it understands whiteness by abstracting from that which has it, which we call white. Whence, although whiteness is not found without a subject, nevertheless the intellect understands it by abstracting it from a subject, namely, the subject [itself] not having been understood; and according to this, accidents pertain to the intellect in the abstract rather than in the concrete.

And because our cognition has its origin in sense, those things which are less sensible [able to be sensed] are less known to us. But abstractions are less sensible, as has been said [54B-5*,6*]. Therefore they are suitably known through concrete things, as through things known first. Therefore the explanation of quality, which is abstract, has been well given through "quale," which is concrete, by saying: quality is that in virtue of which we are said to be such.

It should be known that there is a difference between quantity and the other accidents, for in it [quantity] something concrete is predicated of an abstract thing; for we say, this line is so long, which does not happen in the other categories of accidents, for it cannot be said that this whiteness is of this kind. And hence it is that quantity in the abstract is not defined or described through the concrete. But if one is predicated of another conversely, then one will be wrongly known as the other.

And thus it is clear concerning the description of quality.

CHAPTER XIV

OF THE FIRST SPECIES OF QUALITY, HABIT AND DISPOSITION

Now there are four species of quality which are subaltern genera. The first is habit or disposition.[1] Here it should be known that disposition is the genus in respect to habit. For every habit is a disposition, but not every disposition is a habit; for an easily changeable quality is a disposition, yet it is not a habit.[2]

Whence, if disposition is taken as a quality which is easily changeable, then it is one species of quality condivisible with habit; but if disposition is taken, as it is said, as much of a quality easily changeable as of one changeable with difficulty, then it is a genus in respect to habit and to the disposition which is condivisible with habit. For in Book V of the Metaphysics,[3] habit is defined thus: habit is a disposition by which some one is disposed well or ill, either in respect to oneself or to another. For understanding this definition, it should be known that disposition is the order of a thing having parts, not only quantitative parts, but also essential or potential parts. Whence the order of those parts among themselves or in regard to something else is called disposition.

For the concept of habit, however, several things are required: whether there are parts either potential or actual which are commensurable one with the other in different ways, so that some middle way [modus] of commensuration can be found in them; and such a way is called a habit. For instance, health is the due balance of fluids mutually commensurable, which nevertheless are reduced to health as to a determined way of commensuration; and therefore health is a habit. Now, since the elemental qualities are measured in the very things which have elements according to one way and not diverse ones, habit is therefore not found in them. Therefore, it is well said that habit is a disposition or an order of parts commensurable in different ways, either well or ill, that is, according to a determined middle way.

But because it is said either according to itself or according to something else, it should be known that habit is found in two ways. One is a disposition of the thing according to the manner and nature of the thing within, as natural parts are measured one with the other according to one middle way, as it has been said of health, which is the due commensuration of four fluids; similarly beauty, which is the due commensuration of the members. And this is what is expressed in the definition of habit, namely, in respect to oneself.

In another way a habit is that which is the disposition of a thing in an order to an end. And since the ends of potencies are operations, the middle way is determined according to whether they are well or ill ordained toward their operations, as are the virtues and vices. And for this reason "or toward something else," namely toward an end, is expressed in the definition of habit. And such habits are difficult to change, for since a virtuous habit is brought about by many repeated acts, therefore it is not easily changeable. But he who would begin to be disposed or habituated toward virtue, from a few actions would be said to have a disposition, which is easily changeable, speaking of the disposition not as it is the genus with respect to habit, but as it is a species condivisible with it.

And thus it is clear about the first species of quality, and so forth.

CHAPTER XV

ABOUT THE SECOND SPECIES OF QUALITY, WHICH IS NATURAL POTENCY OR IMPOTENCY

The second species of quality is the natural potency or impotency for doing or suffering anything easily. Now to understand this species of quality, it should be known that potency can be taken in two ways. In one way, as it is transcendental, for potency and act divide all being, as is clear from Book V of the Metaphysics,[1] and in that genus in which there is actuality there is also potency; for if an actual line is in the genus of quantity, so also a potential line is in the same genus. But we are not speaking of such potency now. In another way potency is taken according as it is the principle of changing into another thing inasmuch as it is another thing, or that it is the principle of changing from some other thing inasmuch as it is another thing.

It should be noted that, as an artificial agent requires an instrument through which he may work, and on account of the limitation of his power cannot have at the same time that which is necessary for acting in himself and in the instrument, so also no created substance is able of itself to be the sufficient principle both for acting and for being, whence some other principle is required in it which is immediately disposed to operation, and we call this principle a potency. Indeed, if it is active, as the nutritive powers in a living body are, it is called an active potency, which is the principle of changing into some other thing insofar as it is another thing. And I say "insofar as it is another thing," because nothing can be active and passive in respect to the same thing at the same time.

Whence if an active potency is the principle of change, it will not be the principle of changing itself, but another thing insofar as it is another thing. But if such a principle be passive, as are the sensitive powers in an animal, then it is the principle of changing from another thing insofar as it is another thing, and to this species of quality belong hard and soft, a boxer and a runner, and such like. Thus it is that [the word] boxer is not taken from the art of boxing since thus it would be in the first species of quality, but from a natural potency.[2]

And thus it is clear concerning the second species of quality.

CHAPTER XVI

ABOUT THE THIRD SPECIES OF QUALITY, WHICH IS PASSION OR THE PASSIBLE QUALITY[1]

But the third species of quality is called passion or the passible quality. It should be noted that passion, as it is in motion, is one of the ten categories; and here passion is not taken [thus]. But it [the third species of quality] is called passion or the passible quality because it is produced by some other passion taken in the first way, or because it produces some passion. For instance, heat and cold are called passible qualities in that they carry some passion to the sense of touch; but whiteness and blackness are called passible qualities because they are generated by some other induced passions; for on account of the great heat acting upon the bodies of the Ethiopians, the Ethiopians are black; and on account of the cold, the Germans are white. It is even allowable that whiteness and blackness be called passible qualities in the fact that they produce some passion in the sense of sight, for to see is a certain suffering.

Here note that although certain absolute beings do not have species from any extrinsic thing which does not belong to their essence and that they may be distinguished in themselves, as is evident in simple things, for whiteness is in itself really distinguished from blackness, or by some part intrinsic to itself, as man is distinguished from the horse, and contrariwise, by their forms; for nothing extrinsic which is not of the essence of the thing constitutes or distinguishes some thing from another specifically; nevertheless nothing prohibits that at some time some things are distinguished by their extrinsic causes, namely, by the final cause and the efficient cause; as we say that potencies are distinguished by acts as well as by ends, and acts are distinguished by objects as well as by efficient causes.

And although in this way the extrinsic distinguishing things do not belong to the essences of the distinct things, nevertheless through such distinctions their specific natures are known; for potency which is the principle of change, as has been said [71B-95*], is defined through act, as through the manifestation of its specific nature; and acts are defined by their objects, as we say that to see is sight moved by color.

Thus it is in what has been set forth. For although passion and the passible quality, as simple forms, may themselves be in the specific essence [esse], nevertheless certain ones are defined through an act as through an end, namely, because they can cause a passion in the sense; but sometimes through efficient causes, namely, because they can be caused by the passions. However, passion and the passible quality differ, because a passion passes quickly; for instance, the blush which is caused by shame and the pallor which is caused by fear are called passions because they pass quickly; nor in the Greek language are they called red and pale from such redness or paleness, although perhaps it is not so in our tongue, but now they are called the blush of shame and the pallor of fear. And because anger, love and hatred and the like, all of which the Philosopher in Book II of the Ethics[2] calls passions, are aroused with some other passion and change in the body and last but a little while, they are included under these passions.

But that which does not pass quickly is called a passible quality, as has been said of cold and heat [71B-97*]. But if anger, love, hatred and those things which the Philosopher here calls passions of the soul should last a long time, they would be called passible qualities.

CHAPTER XVII

ABOUT THE FOURTH SPECIES OF QUALITY WHICH IS CALLED FORM, OR ABOUT SOMETHING CONSTANT IN FIGURE

But the fourth species of quality is form, or about something constant in figure.[1] It should be known that form can be taken in two ways. In one way, as it is a certain act, and thus it belongs to the transcendentals since it is found in several of the categories. Therefore, form is a transcendental because it is found in the categories of substance, quantity, quality and the like. And form is not taken in this way here.

In order to see what is meant here by form, first of all let us look at figure, which is more known to us. Whence it should be known that, as has been said above [70A-86*], it is the property of the entire category of quantity that equal and unequal are predicated according to it, whence in itself everything is quantified either primarily or secondarily. The reason is because that is said to be the property of anything which is immediately caused by the principles of its essence. But given two quantities of the same species, it immediately follows that they are either equal or unequal;

this immediately follows as if immediately caused by the essential principles of quantity. Therefore, equal and unequal, although they may be in the genus of relation, are nevertheless properties of quantity.

Thus, therefore, figure is disposed in respect to a continuous quantity having position, of which kind are line, surface, body and place. Now from the line there follows straight or curved; from surface there follow triangular, square, and the like; from body there follow pyramidal, cubical, and the like; from place taken materially there follows a variation of figure according to the variation of the content. However, all the aforesaid are figures which are in the fourth species of quality, for a figure is not a quantity, but a quality immediately caused by the aforesaid species of quantity. And hence it is that figure leads us to a greater knowledge of substance, individual as well as specific, than does any other accident.

But quantity, although it is the ground of the other accidents, nevertheless flows from matter. And since not matter in itself, but only form, is the cause of cognition, therefore quantity does not lead us well to the cognition of the substance in which it is.

But since figure is as it were something formal and the absolute form is related immediately to quantity from which quantity cannot be freed, as has been said [62B-51*; 63A-55*,56*], which is not thus for the other species of quantity, therefore figure leads us more perfectly to the cognition of substance, as is clearly evident from the sculptured figures of animals or men. And thus it is clear about figure.

Form as taken here, however, differs from figure, although they may be reduced to the same genus. Indeed, figure, as has been said [72A-101*], flows from continuous quantity having position, while form flows from the soul having some sacraments, for a character is impressed in the essence of the soul by the reception of some of the sacraments which is a sign of distinction between those having that sacrament and those not having it. Thus the form which is in the fourth species of quality cannot be called a figure because in it there is no continuous quantity; although some say that every figure can also be called a form and that they are synonymous.

CHAPTER XVIII

QUALITY, AND THE CONDITIONS OF THE SAME [AS DRAWN] FROM THREE OF ITS MODES

Now "quale" is taken from "qualitas" [quality]. To understand this it should be known that there is a twofold way of understanding or signifying all the categories, namely, an abstract one and a concrete one. For everything that we understand we know either as that by which it is, it is something possessed; or as that which it is, it is something possessing, for humanity is understood as that by which something is, for by humanity a man is a man; it is likewise with regard to whiteness, for by whiteness something is white. But man and white are understood as that which is, both as having humanity and as having whiteness.

Now "quale" is thus described. "Quale" is that which is denominated according to quality. For according to logic, white is denominated from whiteness and not conversely; for in truth denominatives must have three things. First, that they agree in word with that from which they are derived, namely, in their stem [principium]. Secondly, that they differ in termination. Thirdly, that they mean the same thing, one, nevertheless, as that by which something is, and the other as what it is, and as possessing, as whiteness and white are related. For whiteness and white are alike in the stem as to the word, and they differ in the termination of the word, and they mean the same thing, although in different ways.

It should be known that certain things are "qualia" which have all these three perfectly, as white; but certain ones are "qualia" which differ in meaning from those from which they are denominated, as runner [*cursor*] and boxer [*pugilator*], accordingly they are in the second species of quality; for runner and boxer are derived from the arts of running [*currendum*] and boxing [*pugillandum*], and not from a potency, for there is no name given to such a potency.

Or they are named derivatively from race [*cursus*] and fight [*pugna*], which are not in the second species of quality, and thus do not agree in meaning with those words from which they are derived.

But certain other "qualia" are called derivatives which in no way agree with those from which they are derived, neither in word, nor in stem, nor in termination, nor in meaning; as zealous [*studiosus*] is derived from virtue [*virtus*]. And thus the aforesaid two last meanings of "quale" are predicated in a lessened sense, because they are not said to be perfectly denominative.

And thus it is clear concerning quality.[1]

CHAPTER XIX

OF THE COMMON AND PROPER ATTRIBUTES OF QUALITY

Now contrariety is to be found in quality, though not in every one. How this is understood has been said under the category of substance [64,65-58*ff.]. However, the Philosopher[1] says that it is doubtful whether quality is susceptible of greater or less, but it is not doubtful concerning the "quale"; for it is doubtful whether justice may be greater or less, but not so of the just man, since he is called more just [*justior seu magis justus*]; and how this should be understood has been said in the same place. For it is a property of quality that according to it similar or dissimilar are predicated, which was stated in the category of quantity [70A-87*,88*].

And thus it is clear concerning the category of quality.

ABOUT THE CATEGORY [OF BEING RELATIVE] TO SOMETHING [AD ALIQUID][1]

CHAPTER XX

WHAT [BEING RELATIVE] TO SOMETHING IS ACCORDING TO LOGICAL INTENTION

Having spoken of the absolute categories, we must now treat those which have respect to something else, and first of all relation. It should be noted that because relation has less being, therefore the Philosopher does not treat it, but [he treats] only of relative things which, on account of their concreteness, can be better known by us. Indeed, he calls them relative to something [*ad* *aliquid*] and defines them thus: Such things are called [relative] to something when the same things which they are are said of others [*quaecumque* *hoc* *ipsum* *quod* *sunt* *dicuntur* *aliorum*], or otherwise in some way of another.[2]

For the understanding of this definition[3] it should be known that certain things are relative according to speech, certain things according to being; certain things are real relatives, certain things only according to reason [*ratio*].

Those things are called relatives according to speech which express [*dico*] a thing belonging to another category in their principal signification, but secondarily express a relation or express a reference. For instance, knowledge in its principal signification expresses a habit of the mind, and thus is in the first species of quality, but secondarily it expresses a reference to the knowable and of the sensed to the sensible, which is a certain potency in the second species of quality; and such things are relatives according to speech.

But relatives according to being are those which in their primary signification signify a reference to another.

Real relatives are those which are really related prescinding from any act of the intellect; for, prescinding from any act of the intellect, father refers to son and son to father, because the father really begot the son and the son was really begotten by the father.

It should be noted that for a relation to be real five things are required; two on the part of the subject, two on the part of the term, and one on the part of the things related. The first on the part of the subject is that the relation supposes some real ground in that to which it belongs as a subject, whence non-being [non entis] cannot be a real relation.

The second on the part of the subject is that the fundamental reason why it is referred should be in it, that is, that according to which it is said to be referred should include something real, as the mover in that which moves includes an active potency according to which it is able to act. Whence on account of the lack of this condition the thing understood is not really referred to that which understands, because the thing understood inasmuch as it is such is derived from the act of the understanding, which places nothing according to reality [secundum rem] in the thing understood, but only in the understanding.

The third thing which is required, and it is the first on the part of the term, is that the term to which there is relation should be a certain thing.

The fourth is that the term should be really distinct from the other correlative, because a relation of a thing to itself is not real.

Now the fifth, which is required on the part of the correlatives, is that they be of the same order, so namely, that both be limited in respect to genus and species, or that both be outside of a genus, that thus the concept of genus or of species should correspond equally in them.

But when any one of these conditions does not exist in any relative, there is not a real relation but only one according to reason. Whence the relation of God to a creature is not a real relation, because whatever is in God is not in the genus of relation. Whence although God really is the master of his creature and the creature really a servant, nevertheless in God master is not a real relative, because that dominion is not in the genus of relation equally as the opposite species corresponding to the servitude of the creature.

Example has already been given of the other four conditions. It should be noted that dominion on the part of God is something infinite to which the service of a creature, which is finite, is not equated as if it could correspond to it. The infinite does not correspond to the finite because it has more; therefore the dominion of God is a relation of reason, but the servitude of the creature is a real relation.

From this is clear the description of relatives given above, for the same comprehends all relatives, according to speech as well as according to being, real relatives as well as relatives of reason. For all are referred [dico] to other things, namely, to correlatives; either in the use [habitudo] of the genitive case, on account of which it says that "they are said of others," as a father is the father of a son; or howsoever otherwise, that is, in the use of any case whatever; whether the dative, as a similar thing is similar to something similar; or the accusative, as a large mountain to a small mountain; or the ablative, as the greater is greater than the smaller.

And thus the first definition is clear.

CHAPTER XXI

ON THE SECOND DEFINITION OF RELATIVES WHICH APPLIES TO RELATIVES ACCORDING TO BEING AND TO REAL RELATIVES

Secondly, [being relative] to something is defined thus: those things are [relative] to something in which this very thing, to be related to something in a certain manner, is their being. This definition applies only to relatives according to being and to real relatives, for their being is to be related to something.

It should be noted that for the constitution of a relation two things are required, one as a ground, the other as a term; without these a relation not only could not be, but could not even be understood. For instance, a similarity requires two real white things, of which one is the ground, the other the term; for the similarity of a white Socrates to a white Plato is in the whiteness of Socrates as in a ground, but in the whiteness of Plato as in a term. Conversely, the similarity of Plato is related to that of Socrates, for in two similar things there are always two similarities, one of the one as a ground and of the other as a term, and the other is the converse.

But when I say that the similarity of Socrates has his whiteness as a ground, it should not be understood that the similarity of Socrates is anything in Socrates other than the same whiteness, but only that it is that same whiteness just as it is related to the whiteness of Plato as to its term. For if the similarity were to add anything beyond the whiteness of Socrates, in no way could anything be made similar to another without a change in itself. But a man is made like another without changing him, as is clear; for if anyone in India should be made white now, he would be made like me and I like him with no change having been made in me; for the similarity in me adds nothing beyond the whiteness which really is in me, as is clear.

CHAPTER XXII

THAT A RELATION DIFFERS ONLY EXTRINSICALLY FROM ITS GROUND IN REALITY

But here a doubt arises. For since the ten categories are ten genera of things really different one from the other, if a relation adds no reality beyond the ground, it will therefore not be something other than the ground, and thus similarity will not be in another genus than whiteness, which is false in every way.

It should be said that the division of being into ten categories is a division into ten differences according to reality [secundum rem], either in respect to this, that they express things intrinsically and really different, as substance, quantity and quality which, compared to one another, are different things; or insofar as they express things extrinsically different, because one implies something different which the other does not imply; and thus a relation differs from its ground, because it implies the opposite of the relative. For we say that a whole differs from its part not as a thing [differs] from a thing, but as that which implies more than a part. For a man differs from a soul because he implies matter, which the soul does not imply.

Thus a relation differs from its ground because a relation expresses the reality [res] of the ground and the opposite term which does not express the ground.

From this the second definition of relatives is clear. For if the true being of relatives consists in this, namely, that it implies something as ground and something beyond, namely, a term, then their being is to be related to something else.

CHAPTER XXIII

THAT THE BEING OF RELATIVES IS TAKEN FROM THEIR GROUNDS

And since the being of relatives is, as it were, wholly from their grounds, therefore it should be seen in what things a relation can be grounded. It should be noted that, as is commonly said, relatives are grounded in three things, namely, in action and passion, in measure and measured, and in one. Nevertheless, nothing hinders a relation from being able to be grounded immediately in substance, since matter is referred to form according to its essence and not through anything else added to it, and similarly the creature to the Creator. But usually a relation is grounded in the three aforesaid things. For the ground of paternity is an action, namely, a generation, by which some one begets a son, and the ground of filiation is in a passion, namely, the passive generation by which some one is begotten; and master and slave are related in a similar way. But double and half, triple and third, and the like, are grounded in the measure and the measured; similarly the relation which is between the sense and the sensible, and knowledge and the knowable, is grounded upon the measure and the measured; for the knowable is to knowledge and the sensible is to the sense in the relation of the measure to the measured. But identity in substance is grounded in one; equality in quantity in one; similarity in quality in one, as has been said above [70A-86*,87*], whence different species of relatives may be taken according to these different grounds. Their species can also be assigned otherwise, namely, standing over, as father and master; standing under, as son and slave; equating, as equal and similar, and so forth.

CHAPTER XXIV

ABOUT THE COMMON AND PROPER ATTRIBUTES OF RELATIVES

Now as to which relatives admit of more and less and of contrariety and which do not, it should be known that the relatives whose grounds and terms admit of more and less and of contrariety, also themselves admit of more and less and of contrariety; but those whose grounds and terms do not admit of more and less and of contrariety, do not themselves admit of them.

It should be noted that certain relatives which are grounded in one, howsoever much their grounds do not admit of more or less, nevertheless themselves admit of more and less, as more unequal, as has been said [70A-88*]. Thus they are both grounded in one according to species, and to this is added a privation of more and less. And since such a privation does not consist in being indivisible, but can be extended or withdrawn, hence it is that equal admits of more and less, and so on of the others. For all things are called relative in reference to a correlation [*convertentia*], as the father is the father of his son and a son is the son of his father, and this belongs to all relatives. Nor is it necessary that a correlation should always be similar in all cases, for knowledge is called knowledge of the knowable, and the knowable is knowable by knowledge and is not said to be of knowledge.[1] Now that there should be such a correlation, it is necessary that it should be made to something else and according to that word according to which it is referred [dico] to something else; for a head is not said in reference to an animal according to correlation. For if it is said that a head is the head of the animal, nevertheless it cannot be said that an animal is the animal of the head; for head is not referred to animal according to that word which is animal, but according to another word, namely, headed thing; whence these two things are referred to a correlation, a head is the head of a headed thing, and a headed thing is headed on account of a head. And therefore if at anytime such a word is not found, it is allowable to coin one, so that an oar is not called an oar of a ship; but we coin a word and say that an oar is an oar of an "oared" thing; and thus all relatives are said with reference to a correlation.

Now all true relatives are together in nature, for if to be relative is to be related to something else, as has been said [73B-106*], given one relative, its correlative is immediately posited, and therefore the things posited posit themselves, and the things which are destroyed destroy themselves.

Now it is a property of relatives that he who definitely knows one definitely knows the other also. For if a definition is a statement signifying what the being of a thing is, and for the being of one relative a correlative is necessarily required, therefore he who knows the being of one relative must know the being of its correlative.

And thus the predicament "to something" is clear, and so forth.

ON THE SIX PRINCIPLES[1]

CHAPTER XXV

ABOUT THE SIX CATEGORIES AND THEIR PREDICATION IN COMMON

Now we must treat of the six other categories which are called the six principles. It should be noted that since the categories are arrangements of the predicables, as has been said above [61A-42*], therefore they are known through [the term] to be predicated or to denominate. Now something can be predicated of another denominatively, or can denominate it, in two ways. In one way, such a predication or denomination may be made from something which is intrinsic to that about which such predication or denomination is made; namely, that it may perfect the same either through identity or through inherence. And furthermore this can happen in two ways. In one way, such a denomination may be made absolutely and in itself, and thus the three absolute predicaments, namely, substance, quantity, and quality denominate things; whence we say Socrates is a substance through identity, or he is quantified and qualified through inherence. In another way, such a denomination may be from something intrinsic, yet implying something extrinsic as a term to which that which is denominated is related; and it is in this way that relation denominates, as when we say that Socrates is equal or similar to Plato.

In the second way, the denomination is made from something extrinsic, namely, from that which is not in the thing designated formally, but is something absolutely extrinsic from which such a denomination is made, as when it is said that Socrates is an agent, such a denomination is from that same transient form which was acquired in the one subjected to the passion. For heat having been caused in a recipient in order that it denominate something hot, which denomination is intrinsic, nothing else is required that it should be so designated through the same except the subject in which it is. But in order that some such thing, for example, heating, be designated, of necessity it requires something other than the subject, namely, the effective cause of heat, since there is required a recipient in which there is such a heating.

It is the same of place, which is a certain surface, for in that it denominates that of which it is the surface, a surface requires nothing except the subject in which it is, namely, a containing body; but in that it denominates something else, as place denotes the located thing, it requires something other than a subject of the surface; and these six categories denominate in this way. And thus such things denominated by extrinsic denomination imply some other reality than the thing denominated, which the other categories which denominate intrinsically do not imply, although the things themselves from which such denomination is taken may be the same; and such a diversity suffices for distinguishing the categories. And in this way these six categories are distinguished from the first four, namely, by the extrinsic things which they denominate, which the first four do not.

Now it should be known that between the extrinsic denominator and the thing denominated from it, extrinsic denomination requires something regarded in itself because it is necessary that of itself and from the condition of things such a mode of denomination should follow the thing, since it is necessary that such a mode of designating the thing follow essentially and from the condition of the thing. And therefore it is necessary that the thing from which such a denomination is made should be of itself the ground of some habitude. And since the habitude of things is not in itself a ground of habitude, otherwise it would regress into infinity, therefore such denomination is not made in respect to it. But to have something produced from itself, which pertains to action, implies a certain reference, and to have a place, and so on of the rest.

Nevertheless, these categories do not express these references because this reference belongs to the genus of relation; but the aforesaid categories express it only absolutely as denominating it extrinsically; for heating, which is an action, expresses heat, which is an absolute form, and denominates the efficient cause, namely, that which is making hot; and so on of the others.

But others explain it in another way. For according to them the reference is a transcendental, and not every reference is in the genus of relation but is said in respect to seven categories, namely, to relation and to the six principles. Now this is the difference between the reference which belongs to relatives and that of the six principles, for in relatives every reference demands in its other term [*terminus ad quem*] another reference corresponding to itself, and I mean in true relatives; but in the six principles the reference does not require in the other term some reference corresponding to itself. For action, according as it is one of the six principles, expresses a reference in motion to an agent, whence that which takes place between the agent and the patient, namely, motion, is called an action in reference to the agent; but in reference to the patient, it is called a passion [*passio*]. Nevertheless, neither in the agent nor in the patient is there a reference to the aforesaid motion, although there is a reference of the agent to the patient and conversely; which references are not action and passion, but two relations, namely, of activity and passivity. Similarly also, time [*quanda*] expresses the reference of time to a temporal thing, and so on of the others, as is clear.

CHAPTER XXVI

WHAT ACTION IS ACCORDING TO THE PREDICAMENTAL CONCEPT, ACCORDING TO EACH OPINION

Action is a form according to which we are said to act on that which is subjected [to us]. In order to understand this it should be known that action is twofold; one which is called immanent action, as to be hot, another which is called transient action, as to heat.

Immanent action is not the efficient cause of the thing in order that it may be in act, but it is the same as being in act, for to be hot is the same as the being in the act of heat; and according to such action something is said to act which is formally such, as heat causes or acts formally to make that in which it is hot, for to be hot is compared to heat as a second act is compared to the first.

It should be noted that first act and second act can be predicated in three ways. In one way thus, that the first act be some form and the second act a transient action really distinct from it, as heat is related to fire and its heating; and in this way to be hot is not the second act of heat. In the second way the form which underlies is called the first act and the act inhering in it is called the second act, as are surface and heat; but neither in this way is to be hot the second act of heat. In the third way, first and second act are predicated according to the fact that one and the same act can be taken as it is considered in itself and as it is considered as belonging to another actually having the same, as heat may be considered as it is a certain form in itself; but to be hot implies the same form in relation to something having it, because to be hot is to have heat or to be in the act of heat.

Similarly, to understand and to feel are immanent acts, because they imply that the act of understanding or of feeling is in act in the one understanding or feeling. This immanent action, however, is not directly in the category of action, therefore enough has been said about it. But the second kind of action, which is called transient, constitutes the category of action.

It should be noted that, as is said in Book III of the Physics,[1] action and passion and motion are one and the same thing; whence heating is nothing other than heat as it is in motion, namely, according as it is the act of something existing in potency, which is the same thing as motion. For example, given that water be heated by fire, it is certain that there is in it some heat caused by the heat of the fire; which heat, considered with respect to its being, is a form which is a quality in the third species of quality. But according to the fact that it is in motion, namely, because it is more and more shared by the water, it is called a motion. But inasmuch as it denominates the fire giving the heat it is called an action. For according to this fire is called a heating agent, according to the first opinion; and according as it has a reference to fire as to an efficient cause, it is an action according to the second opinion, and heating is called an action. But heating is called a passion as it denominates or implies a reference to something receiving in comparison to that from which it receives; whence the concept of action as it is a category consists in this, that action expresses the form in motion or in change as it is from the efficient cause. Whence the efficient cause which it denominates or to which it has reference belongs to the concept of action.

Neither does it follow on account of this that the action, although fundamentally it may be the same thing as heat, should be in the same category as heating, as it is a passion. Also, as has been said above in the category of relation [74A-110*,111*,112*], granted that a likeness be the same thing as a whiteness, nevertheless because the likeness implies some other thing which whiteness does not imply, namely, another term [*terminus ad quem*], it is in another category than is whiteness.

So it is in what has been put forth; although heating as it is an action expresses heat in motion, nevertheless because it expresses action as denominating an agent [agens] according to the second opinion, to which heat has no reference nor has heating as it is a passion, therefore, heating as action is in another category than heat or heating as a passion. From this the description of action placed above is clear, namely, action is a form according to which we are said to act on that which is subjected [to us]. For it is a form which is in motion or in change, according to which we express or denominate agents according to the first opinion, or which has reference to us who act as to an efficient cause, namely, because we act upon the thing which is subjected [to us], that is, upon the thing which received [it], according to the second opinion. And thus it is clear what action is.

It should be known that the author of the six principles says some things about corporeal or incorporeal action, which I simply think false, or which require a forced explanation. For he says that corporeal action is necessarily accompanied by the motion of the agent, which I do not think is true in all actions of bodies; for a magnet, not moved by any kind of motion attracts iron, and this can be found of many other agents; therefore, I omit all such things that he puts here.

CHAPTER XXVII

WHICH ACTION ADMITS OF MORE AND LESS AND OF CONTRARIETY, AND WHICH DOES NOT

Now action admits of more and less and of contrariety, yet not all action. It should be noted that action either expresses a form which is in motion, as heating, which expresses heat in motion only as it denominates the agent or as it has reference to some other thing, or it expresses the form which is in change and not in motion, as the generation of substance and creation. And because, as has been said [76B-126*], action adds nothing beyond the form which it expresses except what it denominates according to the first opinion, or expresses a reference to an agent according to the second opinion, if the form which it expresses is in motion the action will be said to admit more or less, or the agent itself which is concrete.

As it has been said in the category of quality [73A-85*; 64,65-58*ff.] that abstractions do not admit of more or less, but concretions do, so in this case it is said that something, namely, heat [calefacere], admits of more or less because it is more or less heating.

But if the form which action expresses should not be in motion but only in change, since such a form is not suited to admit of more or less, nor consequently of contrariety, taking contrariety in its proper sense, neither also does such action admit of more or less, nor consequently of contrariety, taking contrariety in its proper sense. Whence generating or creating does not express more or less generating or creating.

And thus it is clear, and so forth.

CHAPTER XXVIII

THAT THE PROPERTY OF ACTION IS TO PRODUCE SOME PASSION BY ITSELF

Now it is the property of action to produce passion by itself. It should be noted that although action and passion and the form by which something is moved are one thing, nevertheless, on account of a different denomination which they imply or on account of a different implied relation they are different categories.

Action and passion, however, are related to each other in this order: for to every transient action tending outwards there follows a passion, for if to act is nothing else than to cause a form in the thing affected with the motion, and to receive [patior] is nothing else than to receive [recipio] such a form, it necessarily follows that to every action there follows a passion, from every acting there follows a receiving. Therefore, it is well said that the property of action is to cause a passion in the thing affected.

And thus it is clear about action.

CHAPTER XXIX

WHAT PASSION IS FORMALLY, AS IT IS A CATEGORY

Passion [passio] is the effect and product of an action. It should be noted that action and passion are one and the same thing, namely, a form which is in a state of flux or becoming, whence it does not seem that passion is the effect of action. For if they are considered insofar as they are one form, then, since the same thing cannot be the cause and effect of itself, a passion will not be the effect of an action. But if they should be considered insofar as they are two, because action denominates the agent and passion the recipient [patiens], still it does not follow that a passion should be the effect of the agent itself. Therefore, a passion is not the effect of an action itself.

It should be known that something can be called the effect of another thing in two ways. In one way properly, namely, according as it is caused or was caused by it, and in this way a passion is not the effect of an action. In another way because when either one happens, they are happening together so that by a necessary connection one is understood to be after the other. Whence the first is said to be in a certain way the efficient cause in respect to the second.

In the same way as in the treatise [*sic*] On Property it has been said how the nail and the wood in which it was fastened were related to motion [59B-32*], thus in its own way passion is disposed in respect to action; for action and passion come from the same agent in a certain necessary order. For first of all the agent is understood to act before anything is affected by it, and thus passion is said to be the effect of action.

CHAPTER XXX

THAT THE DENOMINATION OF A PASSION IS FORMALLY FROM SOMETHING INTRINSIC [SIC]

A doubt arises, however, about what has been said [75A-120*], namely, that these six principles denominate substance extrinsically. For it has been said [76A-125*] that an action, which is subjectively in the receiver [patiens] denominates an agent. Indeed, this does not seem to be true of passion, for the same thing denominates the receiver in which it is formally and subjectively.

It should be said that a form in a state of flux, which itself is a motion, taken in itself is in an absolute category; for instance, the heat which is caused in water according as it is in a state of flux is in the category of quality, because motion is in the category of the term toward which it is. Now as it is in flux it is called motion, but as the thing having such heat, namely, the water which is heated, is changed by the fire which is heating, such a denomination pertains to passion according as it is a category. For water is not said to be heated because there is heat in it but because such heat is from something heating; whence if there were no heating thing, however great the heat in the water might be, it would not on that account be said to be heated or to be affected [*patior*], but it is said to be heated and to be affected insofar as such a heat comes from a heating thing. Therefore, such a denomination or reference of the receiver is formally from something extrinsic from which it implies an agent, which is extrinsic. So therefore, a passion denominates a subject extrinsically, or it expresses a reference from something extrinsic.

But passion admits of more or less and of contrariety in the same way as has been said of action, which is understood as has been explained above concerning action [76B-127*,128*].

And thus it is clear about the category of passion, and so forth.

CHAPTER XXXI

ABOUT THE CATEGORY OF TIME, WHAT IT IS, BECAUSE IT IS TIME AS IT DENOMINATES THE TEMPORAL, OR THE REFERENCE OF TIME TO THE TEMPORAL THINGS WHICH IT MEASURES

Time [*quando*] is what remains from the adjoining of time [*ex adjacentia temporis relinquitur*]. Now this adjoining of time is called its measure, namely, as time itself is the measure of temporal things.

Now to know the particulars of the aforesaid description, and what time [*quando*] is, it should be noted that it is of the concept of measure that when applied by the intellect to things measured it should make certain their quantity to us. And because quantity can be taken in two ways, namely, that of extension and that of perfection, therefore, on both sides measure is found. For we say that the measure of all colors is whiteness. Indeed, since whiteness contains more of perfection and of participation in light than the other colors, by applying the same to the other colors by the intellect we are made certain as to the quantity of their perfection, not however, as to the quantity of their extension; similarly, by a line two cubits long applied to a piece of cloth we are made certain as to the quantity of its extension.

Since time [*tempus*] however, is nothing else than the successive quantity of motion itself, according to this time [tempus] can be taken in two ways. In one way broadly, namely, for the whole successive quantity of motion, and by so accepting time there are as many times as there are motions, because all motion has a successive quantity making it formally so much by successive quantity. And such quantity is not motion, but an accident of it making the same to be formally so much, or it is an accident of the cangeable thing itself existing in it by means of motion in the same way as some other quality, namely color, is in a substance by means of its surface as was said above [63B-55*,56*]. And on account of this succession the Philosopher, in Chapter V [*sic*] of the *Metaphysics*,[1] has placed motion in the genus of quantity, whence motion is not in the other genera unless perhaps by reason of the term of the motion, as we say that increase and decrease are in quantity, not by the concept by which they are motion, but by the concept of the other term [*terminus ad quem*].

But its succession is called time [*tempus*], time being taken broadly; and by such time all motion has to be measured as by an intrinsic measure, because the motion is as great as its succession certifies to us about its quantity. And since sometimes such succession is more known to us, therefore we measure the succession of the prime movable by it, as the Philosopher says in Book IV of the Physics.[2] For we measure time by our actions, as when we have gone so far on a road, therefore so many hours of time have passed.

In another way time [tempus] is more strictly and properly said to be the successive quantity of the first motion or of the motion of the prime movable, which succession is the most uniform and the most simple, and consequently is most naturally fit to make us certain about other successive quantities when applied to them, according to which we say that it has lasted for an hour or for a day. And since such a succession is one in number, therefore the time of all temporal things is one in number, through which all other motions insofar as they are successive are measured as by an extrinsic measure.

It should be known that by the aforesaid succession of the first motion all other motions are measured as by an extrinsic measure, and the parts of the motion of the prime movable are measured, as namely, a part of its motion may be measured by a part of time as by an intrinsic measure, as we say that this revolution of the heavens was on this day and that was on that day; so it is of the other moving things that are measured by their succession as by an intrinsic measure.

It should be known that the measure of each one can be considered in two ways; in one way absolutely, namely, according as it is applicable; in another way according as it is applied to the measurable thing itself. But since time [*tempus*] is a certain measure, it could be considered in these two ways; in one way absolutely, and thus it is called time [*tempus*]; in another way as applied to successive motions, whether they are parts of the motion of the prime movable or whether they are the motion of another; or as applied to movable things insofar as they are movable.

And because such things as they are so measured by time are thus denominated by the thing measuring, as we speak of today's walk, therefore from such an absolute thing, namely, from time so denominating, the category of time [*quando*] is taken according to the first opinion. But according to the second opinion, time [*quando*] is the reference of time [*tempus*] as of the thing measuring towards the temporal itself. Wherefore it is said that time [*quando*] is what remains from the adjoining or measure of time [*tempus*]. For time [*tempus*], as it measures the temporal, denominates it by an extrinsic denomination and this remains and this is called time [*quando*], according to the first opinion. But according to the second, time [*quando*] remains from the adjoining of time [*tempus*], since from the measurement which is from time [*tempus*] the reference of time measuring to the measured, which is called time [*quando*], remains. And as there are parts of time [*tempus*] itself, namely, present, past and future, so also are there parts of time [*quando*], since from all such parts temporal things are denominated; for we say, this is today's work, or tomorrow's, or yesterday's. And thus it is clear what time [*quando*] is; because it is nothing other than the absolute form which is time [*tempus*] as it denominates the temporal. Or, according to the second opinion, time [*quando*] is nothing other than the reference of the aforesaid absolute form to the temporal things which it measures.

CHAPTER XXXII

THAT TIME [QUANDO] IS NOT THE REFERENCE OF THE THING WHICH IS MEASURED TO TIME [TEMPUS], BUT THE CONVERSE

It should be known that some say that time [quando] is not the reference of measuring time [tempus] to the temporal thing, but conversely, is the reference of the thing measured to time [tempus] itself. I do not think this is true, because according to them time [quando] would not be an extrinsic but an intrinsic denomination, and thus it would not be one of the six principles which denominate extrinsically, as has been said above [75A-120*]. And it would follow according to the second opinion that time [quando] would be a relation, since it would be an intrinsic reference, which is false.

It should be known that the succession of the first motion which is called time [tempus] can be the measure of the parts of the motion of the prime movable, and in this way it is an intrinsic measure; and the denomination which pertains to the category of time is formed from such measure; as we say that this revolution is today's or was yesterday's. And in this way in whatever there is time [tempus], in that also there is time [quando], since time [tempus] is subjectively in the motion of the prime movable. And therefore, such a denomination is in its parts, which are denominated from the parts of motion, as has been said [77B-136*].

Or, according to the first opinion, time [tempus] is in the prime motion, which is the ground of the reference which is time [quando]. Also, the term of the reference itself, namely, the measured parts of motion which are the term of such a reference is in it, and this is what the author of the Six Principles says, that in whatever there is time [tempus], in that also there is time [quando].

In another way time [tempus] can be the extrinsic measure of other motions from which there is then made the denomination which pertains to the category of time [quando], as we say, This walk was yesterday. And thus time [quando] is not in that in which time [tempus] is, because time [tempus] is subjectively in the motion of the prime movable and the denomination made from it is in the walking. Or, according to the second opinion, time [quando] is a reference grounded in time [tempus], whose term, however, is walking, and thus in another way it is not in that in which time [tempus] is, and so forth.

CHAPTER XXXIII

THAT TIME DOES NOT ADMIT OF MORE OR LESS, NOR DOES IT HAVE A CONTRARY, AND THAT TIME IS IN ALL THAT WHICH BEGINS TO BE

Now time [quando] does not admit of more or less, neither also is there anything contrary to time itself. For this category is taken from an absolute denominating form, or is a reference to such a form. And since the time [tempus] from which time [quando] is taken does not admit of more or less, nor has it any contrary, therefore neither does time [quando] admit of these things.

Now the property of time [quando] is to be in everything which begins to be. It should be noted that a thing can begin to be in four ways. For certain things begin through motion alone, as the heat in water which is heated begins to be by the motion of heating. Indeed, motion is placed in the genus of such things, for an alteration is in the genus of the quality in which the alteration is found.

Certain things begin to be through a change following necessarily from a motion, as a substantial form is introduced into matter through generation following an alteration, of which the same is at least the extrinsic term.

But certain things begin to be through a change following motion but not from necessity, as the illumination of our hemisphere in the morning. The local motion of the sun, through which it is made present to us, precedes this illumination; however, the motion does not necessarily precede such a change because in the first instant when the sun was created the air was illuminated by the sun by no preceding motion of the sun.

But certain things, as those which are created, begin to be through a simple emanation and not through a motion nor through a change.

But it should be known that time [tempus], whether it be continuous or discrete, and aeviternity are certain measures, according to which certain acts which are produced are to be measured, namely, because they have to endure for this long or that long. There is, however, a certain actuality in which, while one number remains in existence, there is succession, and its duration consists in receiving part after part; as there are those things about which it was said that they begin to be only through motion. And such actualities when they become or when they have been made, namely, when they are at rest, are measured by continuous time [tempus]. But their becoming is motion, and their having been made is rest. Now motion and rest are measured by continuous time. But in every such actuality there is time [quando], as in time [tempus], as has been said [78A-

137*]. And this is the property of time [*quando*], to be in every such actuality which thus begins to be; for such actuality, since it is properly measured by time [*tempus*], also properly takes its denomination from time [*tempus*], as is said of walking today or yesterday, and this is time [*quando*], as has been said [77B,78A-137*]. Or, according to the second opinion, time [*tempus*] considered as measuring properly has reference to such actualities, and the reference is time [*quando*]. Therefore, the property of time [*quando*] is to be in every such actuality which thus begins to be, as in a term, as has been said [78A-137*].

In truth anything is an actuality whose duration does not consist in receiving successively part after part, but consists in this, that the same remaining indivisible thing persists, and this actuality is double. For a certain thing is an indivisible actuality in which there is no succession, but nevertheless another actuality naturally comes into being to succeed it and it itself comes into being to succeed another, as the substantial forms of corruptible things and the successive thoughts and volitions of the angels; for each one of these acts is indivisible, and one succeeds another. And indeed, one form succeeds another in prime matter, and nevertheless the being of such a form is in the indivisible thing, and thus it is for the aforesaid thoughts and volitions of the angels. Whence such acts are measured by discrete time, and the succession which is between such acts is measured by discrete time.

Discrete time, however, is in that same genus of discrete quantity in which speech is placed. For speech is not placed there on account of its sound, since sound is a quality; nor on account of the number of syllables, because thus it would not be a species other than number; nor on account of the many continuous times of the syllables, because thus it would not be a species other than continuous time; for the several parts of time do not make a species other than time, as was said above [67A-71*]. But it is placed [there] as a measure of the utterance of sound. There it is not only to give more but to give more duration, inasmuch as several such indivisible things last longer than one. Therefore, it is necessary to place there some number pertaining to the measure of the duration of something; and this is discrete.

In such things which begin to be in this way and have their being thus there is no time [*quando*], inasmuch as time [*quando*] is here understood, as it is remains from the adjoining of continuous time [*tempus*]. And if time [*quando*] should be in them from the adjoining of the present moment [*nunc*] itself of discrete time, it would be of another nature than the time [*quando*] about which there is now question.

In truth, any act is indivisible which is not naturally constituted to succeed another nor another to succeed it, such as the act of being of the angels is, and of the rational soul, and of the heavenly bodies, and the understanding of an angel by which, namely, it understands itself, which is not successive; and the beatific vision of angels and of souls; and such acts are measured by aeviternity, which is simultaneously whole. Whence, although such acts begin by simple emanation, nevertheless there is no time [*quando*] in them, for it does not belong to them to be measured by time [*tempus*].

We can say, however, that in all the said acts there is time [*quando*] by a certain coexistence which continuous time [*tempus*] has with their durations, for we say, "When was the angel?" and we answer, "Yesterday" or "Today". It is not, however, that the angel should be measured as to its being by yesterday or today, but because yesterday or today were simultaneous with the said duration of the angel, namely, with its aeviternity; or that its aeviternity coexisted simultaneously with the yesterday or today of time [*tempus*], and so on for the rest.

And it is clear about time [*quando*].

CHAPTER XXXIV

ON THE CATEGORY OF PLACE, WHAT IT IS FORMALLY, AND IN WHAT IT IS SUBJECTIVELY

Place [*ubi*] is the circumscription of a body originating in the circumscription of place [*locus*]. To understand the aforesaid description and what place [*ubi*] is, it should be known that place [*locus*] is the immovable surface of the containing body. Now a thing can be in place [*locus*] in two ways, namely, definitively and descriptively. Those things are definitively in place which, although they are not quantified [*quanta*] either essentially [*per se*] or accidentally [*per accidens*], nevertheless are not everywhere. But they are in one part of the world in such a way that they are not in another, as are the angels and separated souls; whence they are said to be in place definitively, that is determinately; because they are so determinately in one part of the world as not to be in another. And of such things it cannot properly be said that they are in place [*ubi*], for those things which are in place [*ubi*] are contained in place [*locus*], therefore they are not properly in [the category of] place [*ubi*].

But circumscriptively all quantified things [*quanta*] are said to be in place [*locus*]. Let us dismiss now [the question], how the ultimate sphere is in place [*locus*]. Whence the quantity which formally makes a material subject quantified, efficiently causes it to be in place [*locus*]; whence a body located by its surface touches the surface of the locating body, and as the surface of the located body is determined, so also is the surface of the locating thing.

Now the surface of a locating body can be considered in two ways. In one way as it is in the locating body and denominates it, and thus it is a quantity. In another way as it denominates the located body, and thus it makes the category of place [*ubi*], which is nothing else according to reality than place [*locus*] as it denominates the thing located by an extrinsic denomination; as a citizen is so called from his city and a Praguian from Prague;[1] or according to a second opinion, the category of place [*ubi*] is a reference to what circumscribes the thing located.

From the aforesaid it is clear that local motion is not in place [*locus*] as such, but is in the category of place [*ubi*]; for motion is subjectively in that which is moved, or in the movable thing. And it is said that motion is in the genus of the form which is acquired through the motion, which is the term of motion. The place [*locus*], however, is not moved, since it is the term of the immovable container, but the thing located is moved.

Now place, as such, is not a form which is acquired in the thing located, but is the form of the thing locating. Therefore, nothing is acquired by the movable thing except place [ubi], which is a reference of place to the thing located, as it circumscribes it. Or it is the denomination supposing the aforesaid reference, according to the first opinion. Now this reference is terminatively in the thing located itself, and according to the extension of the place of that to which such a reference belongs as a ground, it is acquired in the thing which is moved toward some place [ubi] and another, even to the term of motion.

From these things it is clear that in other species motion is acquired in the movable thing itself by an intrinsic form. For in the change which happens from cold to heat, heat, which is an intrinsic form inhering in the heated thing itself, is acquired; and in the increase and decrease there is acquired a certain quantity, which also is in an intrinsically inhering form. But in local motion the place [ubi] which denominates it extrinsically is acquired. Or according to the second opinion, it is the extrinsic reference grounded in the thing locating and terminated in the thing located, as has been said [79B-147*].

Therefore, the description of [the category of] place itself is clear, namely, that it is the circumscription of a body, that is, the denomination of the located circumscribed body originating from the circumscription of place [locus], that is, from the actual circumscribing place itself. Or, according to the second opinion, it is the circumscription of the located body, that is, the reference terminated in the circumscribed body arising from the circumscription of place [*locus*], that is, grounded in place according as it circumscribes the thing located.

CHAPTER XXXV

THAT PLACE DOES NOT ADMIT OF MORE OR LESS, NOR HAS IT CONTRARIETY, AND THAT IT IS IN EVERY BODY BOUNDED BY A SURFACE

In truth, place [*ubi*] does not admit of more or less, nor does it admit of contrariety. For, as has been said [79B-148*,149*], place [*ubi*] is nothing other than place [*locus*] as denominating the thing located which it circumscribes; or according to the second opinion, it is the extrinsic reference grounded in the circumscribing place and terminated in the thing located; which reference adds nothing real beyond the ground except the other term [*terminus ad quem*], as has been said above about relation [74A-112*,113*], whence it expresses nothing different from place. But place [*locus*] does not admit of more or less, nor is anything contrary to place, as has been said above [69B-85*]. Therefore, neither does place [*ubi*] admit of more or less or of contrariety.

Now the property of place [*ubi*] is to be in every terminated body, either denominatively, or, according to the second opinion, terminatively. For although certain other accidents may be in a body, such as heat, sweetness, and the like, and also certain relations may be terminated at a body, as equality or inequality; nevertheless, such do not properly belong to the body as place [ubi] does; for a body is what is bounded by a surface or surfaces, and this belongs to the concept of body inasmuch as it is a body. But because nature does not sustain a vacuum, it is necessary that another surface should be immediately joined to it, which, as it is immovable, is called place [locus] and circumscribes it, and this is place [ubi]; whence place [ubi] properly is in a body, because it immediately follows the body itself as such.

And I say that it is a property of place [ubi] to be in every body, and I add, and not in another; since place [locus] does not belong [debeo] to an indivisible thing as such. For if place [locus] is continuous quantity it is necessary that it be divisible. Now the thing located in place [locus] and its place are made equal. Whence if there were a place [locus] of some indivisible thing, it would follow that place itself would be indivisible.

It should be noted that indivisible can be taken in two ways. In one way mathematically, and in this way a point alone is indivisible, to which, as has been said [69A-80*], place does not properly belong. The naturally indivisible is taken in another way, for one can come to the smallest bit of flesh which if it were divided, would no longer be flesh. Nevertheless, this indivisible thing is quantified [*quantum*] and not a point, and nothing prevents such an indivisible thing from being in place. Therefore, place [*ubi*] is in it. I also say that place [*ubi*] is in the bounded body, for if there should be an infinite body, as the first philosophers held, such a body would be outside the heavens; it would not be in place [*ubi*].

And thus it is clear about [the category of] place, and so forth.

CHAPTER XXXVI

ON THE CATEGORY OF POSITION, WHETHER IT IS SOMETHING ACCORDING TO ITS FORMAL CONCEPT

Position [*situs*] is the order or arrangement of parts in place [*locus*]. Now to understand the aforesaid description, it should be known that part is said in many ways, as is whole. For whole is [taken in] three ways: namely, the universal whole, the potential whole, and the integral whole. And if another whole should be expressed, as whole in quantity, whole in time, whole in place, it is reducible to three.

Now the universal whole is called a genus, whose subjective parts are species. But something is called a potential whole in which there are potencies which can be called neither integral parts nor subjective parts; as the soul in respect to its powers is a potential whole, and any one of its powers is called a potential power.

But an integral whole is twofold. One is that it is constituted from the parts integrating the essence of the composite thing, and one of which parts taken in itself is not constituted naturally to be without another, as form and matter are. But another integral whole is one whose parts are constituted divided from the whole, each one a being in itself [per se], as a whole piece of wood having been divided into two pieces of wood, each one of its parts can be in itself, and this is a passion of a quantified thing inasmuch as it is quantified, as is said in Book V of the Metaphysics.[1]

And because such parts as they are divisible can be so distinguished by the intellect although they may not be divided, and because considered in themselves they have among themselves a certain order in the whole, (because one is considered properly to be the center of the whole, and some one [to come] after another, and so on of the rest,) such an order is called a potency,[1] which is a difference of quantity, as has been said above [68A-75*]. Nevertheless, it is not to be believed that such an ordering, which is called potency [sic], is a relation, since a difference of quantity cannot be in a category other than quantity. But it can be a verbal relation [secundum dici], as we say that knowledge is a relation, or a verbal relation, for knowledge is primarily in the first species of quality, but secondarily expresses a certain reference to the knowable.

In another way these aforesaid integral parts can be considered as they are compared to place [locus], namely, according as a part of place corresponds to each part thus ordered within the whole, and such ordering or arrangement of parts in place is called position [positio], which is the category of position [situs].

It should be noted that whole the whole located thing remains the same and in the same whole place, different parts of the thing located can be connected to the different parts of place; and therefore, there is some difference between the comparison of the whole located thing to the whole place and the comparison of parts to parts; and thus the potency [sic] which expresses the ordering of the parts of the located thing to the different parts of place, is a category other than the category of place [ubi], which expresses the circumscription of the thing located by place [locus].

It should be noted that the surface of the containing body, which is called place [locus], and the surface of the body which is contained are together; and according to that which is the figure of the body contained, such is the figure of the place [locus] or of the containing surface. And therefore, according to the situation of parts and their diversity in the located body, it is necessary that place [locus] should have a different relation [habitudo] toward the located body. Whence from the aforesaid place thus locating diversely, the parts of the located thing denominate it as located by reason of its parts.

It is called the category of posture [situs], or position [positio], as a man is said to be sitting because the parts of a place [locus] thus circumscribe the parts of the thing located. Or according to the second opinion, the reference grounded in place by reason of its parts and terminated in the thing located by reason of its parts is position [*positio*] or position [*situs*].

Therefore it is clear what is posture [*situs*] or position [*positio*].

CHAPTER XXXVII

THAT POSITION IS A DENOMINATION OR REFERENCE TAKEN FROM THE PARTS OF PLACE BY REASON OF THE PARTS OF THE THING LOCATED

It should be known that some say that posture [*situs*] or position [*positio*] is not a denomination or reference taken from the parts of place [*locus*] by reason of the parts of the thing located, but rather is a reference taken from the parts of the thing located towards the parts of place. And if it is objected to them that if this were so it would follow that such a denomination would not be extrinsic, because a reference grounded in the parts of the thing located according to the second opinion, [or] from which follows such denomination, according to the first opinion, which is the category of position [*situs*], is not outside the located whole, whence it follows that position [*situs*] would be a relation; they answer to this that it is the same for position [*situs*] as has been said above about passion [77A-132*], which, although it be subjectively in the passive object [*in passo*], nevertheless the receiver [*patiens*] is denominated from it by an extrinsic denomination, because it does not denominate it except by reason of the agent, which is outside. And so they say that the parts of the located thing thus ordered, do not denominate a whole in that category except by reason of the parts of place [locus] to which they have reference.

And because, as was said above [76A-126*], Aristotle did not make these categories, and the one who did make them was not of very great authority nor had he an expositor of any authority, therefore each of the moderns says [whatever] seems to him [to be so].

Nevertheless, each opinion can be saved, but first there remains greater reason to prove that this category expresses an adventitious extrinsic form. Secondly, it seems to persist even more with the meaning of the terms which imply position [positio], for sitting and lying down seem rather to express the disposition of the parts of the thing located with reference to the parts of place [locus] than conversely. And the relation of rough and smooth is also thus, for that is rough whose parts are not equally extended.

But which of these opinions is the more probable one I leave to the judgement of the reader, and so forth.

CHAPTER XXXVIII

THAT POSITION DOES NOT ADMIT OF MORE OR LESS, NOR HAS IT CONTRARIETY, AND THAT ITS PROPERTY IS TO COME NEXT TO SUBSTANCE

Now posture [*situs*] or position [*positio*], whether it be a reference of the parts of place [*locus*] to the parts of the thing located or conversely, does not admit of more or less because neither the parts of place nor the parts of the located body admit of more or less. Therefore neither does posture admit of more or less. And likewise, it does not admit of contrariety, as can be evident from what was said above [80A-150*].

Now it is the characteristic of posture to come next to material substance. To understand this, it should be known that to come next, as it is here taken, is a relative condition of being. It should be noted that quantity affects a material thing before any other accident, whence by nature a substantial form first informs the prime matter which gives it being, from which informing quantity by nature follows before any other accident. But as has been said above [80A,80B-154*], the proper passion [*passio*] of quantity [*sic*] is that it should be divisible into integral parts. And therefore in Book V of the Metaphysics[1] it is described by the Philosopher thus: that is quantified [quantum est] which is divisible into things always divisible. Position [situs] which is a certain reference, although it is grounded in place, is terminated at these integral parts. Or according to others, it is grounded in the quantified parts and is terminated at the parts of place, from which reference follows the denomination which makes the category of position [situs], according to the first opinion. Therefore, the proximate reference of material substance, whether terminatively or fundamentally, is posture [situs] or position [positio], and so forth.

CHAPTER XXXIX

ABOUT HABILIMENT AS A CATEGORY, WHAT IT IS FORMALLY

Habiliment [*habitus*] pertains to bodies and to those things which are contiguous to a body.[1] Now in order to understand the aforesaid description, it should be known that to have anything expresses a certain reference. For certain things are said to have some things, but between the thing having and the things had there is only a reference of reason; as when anything is said to have substance or parts of substance, as a foot or a hand, or to have quantity or quality. And nevertheless, between the thing having and the things had there is no real reference, but only one of reason, whence this possession [*habere*] pertains to the absolute categories. But certain things are said to have some things such that between the thing having and the things had there is a real and converse relation; as a father is said to have a son and the son a father; and a master [to have] a servant or a possession, and the servant or the possession a master. But the relation of father to son and of son to father is a real relation, and similarly also is that between master and servant, and this possession [*habere*] pertains to the category of relation.

But certain things are said to have some things, and between the things which have and the things which are had there is a real but not a converse relation, but it is the relation of the thing having to the thing had; and in this way time is said to have temporal things, and place the located thing, and the parts of place the parts of the thing located, and the container the thing contained; and this possession [*habere*] pertains to the categories of time, place and position. For the container is said to have a contained which is reduced to the category of place; as time [*tempus*] has the temporal thing, which is reduced to the category of time; and position has the thing situated, which pertains to the category of position, for a vessel is a movable place [*locus*], and place [*locus*] is an immovable vessel, as is said in Book IV of the *Physics*.[2]

But certain things are said to have some things, and between the things having and the things had there is a real reference [which is] not convertible; namely, such that the relation is of the thing had toward that very thing which has it, as a man is said to have a tunic and the reference is from the tunic to the man himself who has it, and not contrariwise; and this possession [*habere*] belongs to that category, namely, habiliment [*habitus*].

It should be noted that, as the Philosopher says in Book XV of *On the Animals*,[3] nature provides some animals with clothing and with weapons, whence some have hair as a vesture, but others a thick hide or shell or something of the kind. Similarly also, for weapons she gives teeth to some, horns to others, but to others, nails, and such like. Now she has given none of these to man, but she has given him an intellect and hands so that through these he might be able to provide for himself and make clothing and weapons for himself from external things. Whence in the other animals clothing as well as weapons also are substantial parts of them and between the things having and things had there is no real relation, but only one of reason, as has been said [81B-161*]; whence the denomination which is made in them either from their clothing or from their natural weapons does not belong to this category.

But between our clothing and weapons and ourselves there is a real reference. And therefore, according as they denominate us as having them, clothing and weapons are the category habiliment [habitus]. Or according to a second opinion, their reference to us is the category of habiliment. Whence this category belongs to men alone.

Now it is true that we also clothe and arm certain animals with external clothing and weapons, for we clothe apes and deck out horses, and in this way this category can pertain to them.

And thus it is clear, and so forth.

CHAPTER XL

THAT HABILIMENT CAN BE GROUNDED IMMEDIATELY IN SUBSTANCE

Now it seems doubtful whether this category is a denomination following a reference or, according to the second opinion, it is the reference itself, as to how this category pertains to the genera of accidents. For it is agreed that clothing or weapons are in the genus of substance. But a denomination taken from a substance does not place it in a genus other than substance. Or according to the second opinion, how will the reference be immediately grounded in substance, since the reference adds nothing real beyond the ground, as has been said above [74A-112*]. Therefore it would follow that either substance would be an accident or that habiliment would not be an accident.

To which it must be said that it is not unsuitable that a real reference be grounded in a substance. For created substance as such really is referred to the Creator, and such a reference is grounded in it immediately; nor for this reason is substance a reference or an accident.

It should be noted that the accidentality of quality and quantity, which are absolute accidents, differs from the accidentality of the other seven categories; for the accidentality of the absolute ones consists in this, that they come into the being in act by inherence, and in this way a substance cannot be an accident. But the accidentality of the other seven categories consists in this, that it belongs to the form or to the subject of the form to have a term to which [it is referred]. And since the substantial form or composite substance can have such a term, in this way it is not unsuitable that it should be an accident, that is, that it should come to the other one accidentally; whence it happens to clothing that it should be adjacent to a body and as such have a reference to the same.

And thus, if clothing is taken as denominating, it belongs to it so to denominate, and thus it is the category of habiliment, according to the first opinion, and is an accident. Or according to the second opinion, it belongs to the clothing to have a body for the term toward which it has a reference as contiguous to it. Or it can be said that weapons and clothing are not made from every substance indifferently, but weapons are made from a substance having a certain quality, for instance, hardness and the like; similarly, clothing is not made from any substance whatsoever indifferently, but from what has some such quality, as, for instance, softness and pliability, or the like; and the reference which is habiliment is grounded on these qualities, or on the aforesaid substances insofar as they have such qualities.

Therefore, habiliment is the contiguity of bodies and of those things which are around a body, which is understood thus: habiliment is the contiguity, that is, the denomination of bodies, as of those things which are denominated and of those which are around a body, that is of those from which such a denomination is made; as a man is called and is denominated as clothed from the clothes which are around the body. Or according to the second opinion, habiliment is a contiguity, that is, the reference of bodies terminatively. For such a reference, namely, of clothing, is terminated at the clothes body, and is of those things which are around the body fundamentally, for the ground of such a reference is the clothing itself, as has been said [82A-165*]. And thus is clear the description of habiliment.

It should be noted that although such a denomination is of the whole being having such habiliment, for a man is said to be clothed and shod, nevertheless it belongs to him by reason of the habiliment which is contiguous to a part. For although a man should be said to be shod, nevertheless this is said by reason of the shoe, which is on the foot, which is an integral part of man; since the whole body is not clothed except by reason of that part to which the clothing is adjacent.

Therefore it is clear about habiliment, and so forth.

CHAPTER XLI

THAT HABILIMENT ADMITS OF MORE AND LESS, THOUGH NOT IN ALL CASES, AND THAT HABILIMENT HAS NO CONTRARIETY

Now habiliment admits of more and less, although not in all cases. But how habiliment is susceptible of more and less seems to be doubtful. For if references admit of more and less, inasmuch as their grounds admit of intension and remission, and according to those references the references of the term are denominated as more or less, as a thing is said to be more or less heating from the greater or less amount of heat it produces; but since the ground of habiliment is substance, as has been said [82A-165*,166*], which does not admit of more or less, therefore neither does habiliment admit of more or less.

To understand this it should be known that, as has been said [75B-121*], these six categories express nothing except the absolute as it denominates something extrinsic; which denomination follows some real reference which is between the thing denominating and that which is denominated, which reference, nevertheless, is in the genus of relation. Or according to the second opinion, they express the aforesaid reference, and such a reference is common to the said six principles. Whence a thing so denominated is said to be more or less from the intension or remission of that absolute denominating thing, as has been said [82B-167*].

But sometimes a thing denominates more or less, not from the intension or remission of the denominating quality, but if there were several denominative things of the same nature [ratio] by which each denominated thing is denominated according to what it is; as we say that a fire heating three pieces of wood heats more than if it heated two with the same degree of heat. But it is evident that all of these three heating [actions] are of the same nature, and that the fire responds to them according to one heating potency, and in this way heating can be said to be more or less, although in the heating [actions] or in any actions it is not customary to predicate more or less in this way.

And it is the same if habiliment is taken according to the second opinion, because if several references of one concept to which one term corresponds, denominate the term as more, fewer, or less, habiliment in the first way does not admit of more or less. For from one garment or shoe, namely one in number, never will any one be said to be more or less clothed or shod. And thus it is understood that not all habiliment admits of more or less, because neither clothes nor shoes are susceptible of intension or remission.

But in the second way habiliment admits of more or less, because one and the same man can be denominated as more clothed from several garments and as less clothed from fewer garments, and so on of the rest. Now this does not pertain to the category of time, since the time which denominates is one for all temporal things; neither also does it pertain to the category of place, since the place of one body is only one; nor to the category of position since to each part of the located thing there corresponds one part of place. But this mode of expressing more or less can belong to something relatively, and to something either as an agent or as a patient. And thus it is clear how habiliment admits of more or less and how it does not.

Or it should be said that the reference of habiliment is not immediately grounded in substance, as has been said above [82A-165*,166*], except by means of some other quality, for instance, hardness or softness and the like, which qualities are the ground of such a reference; but since the said qualities may admit of more and less, therefore habiliment may also.

Nevertheless, habiliment does not admit of contrariety. For as has been said above [65B-61*,62*], contrariety is given by the receiving of more or less when more and less are according to the degree of intension and remission in a species of one genus, as is clear about black and white. But such an intension does not belong to habiliment, as has been said above [82B-168*]. Therefore there is no contrariety in habiliment.

CHAPTER XLII

THAT THE PROPERTY OF HABILIMENT IS TO EXIST IN A BODY AS WELL AS IN THOSE THINGS WHICH ARE AROUND THE BODY, ACCORDING TO THE DIVISION OF PARTS

Now it should be known that the property of habiliment is to exist in the body as well as in those things which are around the body, in many things, according to the division of parts. And how this may be understood has been said [82A,B-166*]. For something is denominated from habiliment according to the fact that the habiliment is contiguous to each integral designated part, as it is said that a man is shod from his feet and helmeted from his head, and so on of the rest.

Now this belongs to none of the other categories, for although in the category of position the denomination of the whole is made by reason of the parts to which the parts of place [locus] are contiguous; nevertheless, it is not by reason of any single designated part but by reason of all, to which the parts of place are contiguous sometimes in one way and sometimes in another. But in the category of habiliment, the designation of the whole is made from one designated part to which a single garment is contiguous.

And because as a body is considered in this category as having habiliment with respect to its designated organic parts, thus the habiliments of the designated parts are diverse and divided; for in the habiliment of one man the part of his clothing is divided from his shoe, and so on of each; therefore it is said that it is the property of habiliment to exist according to the division of the parts of the body, namely, of the person having, and according to the division of those things which are adjacent to the body according to the division of habiliment.

And thus it is clear concerning the category of habiliment, and of all the categories in this way.

It should be noted that the categories pertain to the first operation of the intellect, in which no composition is made through being. Now those things which pertain to this first operation can be considered in two ways. In one way, with respect to the things understood, and we have already spoken of them thus, for everything which so pertains to this first operation is signified by the ten categories, as is clear from what has been said.

They can be considered in another way with respect to their mode of being signified, namely, insofar as they are signified by nouns and verbs and the other parts of speech, and we shall treat these immediately.

Moreover, logic is not only a rational science, as for instance, of the syllogism which pertains to the movement of reason, but also a linguistic [*sermocinalis*] science, for it treats of the syllogism and its parts as to their mode of signifying by considering what a noun is and what a verb is, and by considering universal and particular signs which all pertain to the mode of signifying, all of which we shall speak about later on.

TREATISE III[1]

ON INTERPRETATION OR ENUNCIATION

CHAPTER I

WHAT THE NOUN IS, ACCORDING TO LOGICAL INTENTION

ψHaving spoken about those things which, with respect to the thing signified, pertain to the first operation of the intellect, which is the understanding of indivisible things, as is said in Book III of the *De anima*,[2] namely, since a thing is known as to its quiddity, we must now speak about those things which pertain to the second operation of the intellect, which is here called composition and division,ψ[3] that is to say, that [operation] by which our intellect joins one thing to another or divides one thing from another, to wit, through being [*esse*] and non-being. This treatise is called "On Enunciation" or "On the Proposition," proposition being taken widely. For if it were taken strictly, then enunciation would be its genus. For proposition is said only of the premisses of the syllogism itself, but enunciation is said as much of the premisses as of the conclusion.

Now in order to understand the said enunciation, ψwe must first speak, following Aristotle,[4] about its parts, namely, the noun and the verb, and about its genus, which is speech [*oratio*].ψ

A noun is an arbitrarily signifying utterance [*vox*][5] without tense, none of whose parts signifies by itself, [and which is] definite and in the nominative case.[6] In this definition of the noun, "utterance" is taken as the genus. It should be noted that, as is held in Book II of the *Metaphysics*,[7] the difference between the definitions of supposits and the definitions of forms, whether substantial or accidental, is this: in the definition of supposits there is placed nothing which is beyond the essence of the defined; rather, all the particulars of the definition belong to the essence of the thing defined; while forms, since they cannot be in themselves, but in something else, namely, in a subject or in matter, require a subject or matter in their definition, which nevertheless is not of their essence, and therefore their definitions are said to be by means of adding something [per additamenta]. Whence accidental forms require a subject in their definitions. Now there is this difference in definition among them: abstract forms require a subject in their definitions otherwise than forms taken concretely. Abstract forms require a subject in place of the difference, as when we say, "curling is the drawing together of hairs," where the "hairs," which is the subject of "curling," is taken in place of the difference. But [forms] taken concretely require a subject in place of the genus, as when we say, "a curl is a contracted hair." This having been established, it should be known that the noun, the verb and speech are artificial things and, consequently, accidents. Now their subject is an utterance which is something natural, for in an utterance, as in a subject, art forms the nouns, verbs and speech. And therefore, in their definitions "utterance" ought to be taken as the subject. And since they are concrete, therefore "utterance" is taken as the genus in their definitions.ψ

And an utterance is called significative to differentiate it from non-significant utterances, whatsoever those may be, namely, those which are uttered for no reason.

ψAnd "arbitrarily" is said to differentiate it from naturally significant utterances, such as the snarling of dogs is, which signifies anger just as nature prescribes for them, even though it does not signify according to a human convention.ψ

ψBut "without tense" is said to differentiate it from the verb and the participle. Note here that, as has been said above in another treatise,[8] action, passion and motion are one thing. Now the verb signifies by way of action or passion, and consequently, by way of motion or change. And the first thing which has to be measured by time is motion. And indeed, the verb signifies with reference to time.ψ

ψIt should be known that action and passion can be signified in two ways: either in an abstract way, as there are certain things, and then they do not signify with reference to time, for they signify by way of habit and rest, to wit, without motion, and thus they are signified by the noun; or in another way they are signified by way of action, as they proceed from a subject, and thus they are signified as motion or change, and consequently, as measured by time; and thus they are signified by verbs taken formally and not materially and even by participles, [but] not by the noun. Therefore, the noun signifies without tense.φ[9]

φNext it is said that no part of the noun signifies by itself to differentiate it from speech, whose parts signify separately. Note here that signification is related to the noun as its form,φ but letters and syllables are as its matter or as its integral parts. φSince there is no part, however, which has the form of the whole in its entirety, therefore no separate part will have signification in itself,φ unless it be only that which the whole has. Whence, if the significance be divided in composite nouns, such as "Terranova" and "Castrum joannis" are, so that the one is understood as "a land which is new," then it is not a noun but a phrase; but if their significance is one thing, as a home or something of like kind, then they are nouns.

Next, "definite"[10] is said to differentiate it from indefinite nouns, such as non-man is. Note here φthat every noun, considering pronouns also as nouns, signifies either a determinate nature, as man; or a determinate person, as I and you; or a determinate nature and person, as Socrates and Plato. Since, however, the indefinite noun signifies none of these, it cannot truly be called a noun.φ And that it signifies none of these is clear, φfor a noun which is imposed by privation requires at least an existing subject. Indeed, blindness is not said about the name "animal," rather it supposes that that which is blind be capable of having eyes naturally. φHowever, since the indefinite noun is imposed by negation, it supposes nothing, for it can be said about being as well as about non-being, for we say that a chimera is non-man as a horse is non-man. Whence such [words] signify only by way of the noun which is supposed at least in [their] comprehension.φ

Next, "in the nominative case" [recta][11] is said to differentiate it from the oblique cases which decline from the direct or nominative case through a certain beginning of the declension. In fact, only the nominative case is called the noun principally because through it the imposition of the noun on another signified object is made. The oblique cases, however, do not pertain directly to logic, which is concerned with the true and the false, because such cases, namely, the oblique, with this verb, "I am, you are, it is," into which all verbs are resolved, do not speak about the true or the false. Nevertheless, nothing prohibits them from being joined with other impersonal verbs and signifying the true and the false, as "I am bored with the lesson." And thus it is clear about the noun, and so forth.

CHAPTER II

THE VERB CONSIDERED FORMALLY ACCORDING TO ITS LOGICAL DESCRIPTION

The verb is an arbitrarily signifying utterance, none of whose parts signifies by itself, [with] definite [reference] and [which is] in the present tense of the indicative mood, and it is always significative of those things which are predicated of something else.[1] ψIn this definition, "an arbitrarily signifying utterance, none of whose parts signifies by itself," is understood in the same way in which it has been said about the noun.ψ[2]

And "definite" is said to differentiate it from the indefinite verbs such as "does not run," "does not love," which are not properly verbs. φNote here that it is proper to the verb to signify something by way of action and passion,φ as has been said above.[3] φBut the above-mentioned expressions do not do this; on the contrary they remove action or passion rather than signify any determinate action or passion; [and] therefore, they are not properly verbs. It should be known that, although these are not properly verbs, nevertheless there are some things stated in the definition of the verb which are appropriate to them, and firstly that they signify with reference to time. Just as acting and suffering are in time, so also is the privation of them, whence also rest is measured by time.$^{\varphi}$ Now the expressions mentioned above do signify the privation of action and passion, as has been said above [84B-179*]. $^{\varphi}$And the second point is because it is placed in the definition of the verb that it is always put on the side of the predicate,$^{\varphi}$ since it is significative of those things which are predicated of something else, which is understood thus: since the subject of an enunciation is signified as that in which something inheres, but the verb signifies an action through the mode of action, as has been said [84A-176*], whose nature it is that it should inhere, therefore it is always put on the side of the predicate. And also because in every predication it is necessary that there be a verb, since the verb implies the composition by which the predicate is joined to the subject. $^{\varphi}$Whence as verbs by signifying action or passion signify something as existing in another, on account of which they are always put on the side of the predicate, so also the indefinite verbs mentioned above, since they signify the removal of action or passion, are always put on the side of the predicate, for negation is reduced to the genus of affirmation.$^{\varphi}$

$^{\varphi}$It should be known that verbs of the infinitive moods are sometimes placed on the side of the subject, as when we say, "to run is to move,"$^{\varphi}$ and this is $^{\epsilon}$because they have the force of a noun,$^{\epsilon}$ $^{\varphi}$whence the Greeks add articles to them as to nouns. We do the same in everyday language,φ[4] for we say, "el corere mio," where the "el" is an article. φFor our intellect apprehends the process of action or passion or its inherence in a subject and signifies it as if it is a definite thing, and so it has the force of a noun. But if verbs of the other moods are sometimes placed on the side of the subject, as when we say, "'I run' is a verb," then "verb" is not taken formally, but materially, according to which it signifies that utterance, which is accepted as a definite thing. Whence verbs, sentences and all the parts of speech, when they are so taken materially, are taken in the sense of a noun.φ

Next "in the present tense of the indicative mood" [*recta*][5] is put in the definition to differentiate it from the oblique verbs, namely, the past and future tenses, which are not simply verbs. For, since verbs properly so called signify action or passion, that which signifies action or passion in act, which is action or passion simply, is properly a verb, and verbs of the present tense signify this. Now action and passion in the past or future are only such in a certain respect, and therefore verbs of the past and future tenses are not verbs simply, but only in a certain respect. And they are called inflections of the verb of the present time, for they are called past and future tenses in respect to the present; indeed past time is that which was present, and the future is that which will be present. And likewise verbs of the other moods, though it be a verb of the indicative mood, are called inflections of the verb because their variation, like the variation of tenses, is in respect of the same action or passion. And because the variation of verbs in number and person is not in respect to the same action or passion, but to the subject alone, in whom the action of passion inheres, therefore, they do not make inflections of the verb, and so forth.[φ]

CHAPTER III

THE SENTENCE AND ITS SPECIES

The sentence [*oratio*] is an arbitrarily signifying utterance whose parts are significant by themselves.[1] And how the particulars of this definition are to be understood has been said in the definition of the noun.

And the sentence is divided into incomplete and complete [*perfectus*]. φThe incomplete sentence is said to be that which produces an incomplete meaning in the mind of the auditor.φ[2] Note here that, as has been said in Book V of the *Metaphysics*,[3] the complete is that from which nothing is its own genus is lacking. Now something is lacking from the meaning which an incomplete sentence produces in the mind of the auditor because composition or division is lacking from it. For if I say, "a white man," which is an incomplete sentence, I do not say that anything inheres or does not inhere in him and, consequently, the meaning of this sentence causes the mind to remain suspended because something is lacking to it, and therefore it is incomplete.

Nevertheless, it should be understood that complete and incomplete sentences are not defined by the production of meaning without reason. ψNote here that, although the sentence and each of its parts are artificial and not natural things and they are not natural instruments of the interpretative ψower, as Plato used to say, for the natural instruments of that power are the lungs, the throat, the palate, the tongue, the teeth and the lips; notwithstanding they are the instruments of the intellect itself which is not a material power but above every corporeal nature.$^{\psi 4}$ $^{\varphi}$Now an instrument is defined from its end, which is its use. And the use of a significant utterance is to signify to the auditor a concept of the intellect of the speaker.$^{\varphi 5}$ Therefore complete and incomplete sentences are defined correctly by the production or signification of meaning. Whence a complete sentence is said to be that which produces a complete meaning in the mind of the auditor on account of the composition which it expresses.

$^{\varphi}$Now there are five species of complete sentences, namely, the enunciative, the interrogative, the vocative, the imperative and the deprecative. It should be known that the reason not only conceives things themselves, but through its concept it also directs and orders other things. Now in conceiving things it forms in itself the indicative or enunciative sentence, but in ordering other things it forms the other sentences. Mow somebody is directed and ordered by another to do three things. First, to be attentive mentally, and the vocative sentence pertains to this. Second, to answer with the voice, and the interrogative sentence pertains to this. Third, to execute a work, and the imperative sentence pertains to this as to inferiors and the deprecative sentence as to superiors, to which latter the optative sentence is reduced, because in respect to a superior a man does nôt have any innate power except through the expression of his desires. And suppositive sentences, that is, conditionals, and dubitative sentences are reduced to the interrogative.[6] And since these four species of the sentence do not signify the true or the false, but only a certain order consequent upon them,[φ] [φ]therefore they do not pertain to the present subject, which is ordered directly to demonstrative knowledge, in which the hearing of man is led by the reason to the consideration of the true from those things which are properties of a thing, but they pertain to rhetoric or poetry which induce assent through the disposition of the auditor.[φ] [φ]But only the enunciative sentence, which signifies the true or the false, as well as other sentences which can be reduced to it, belongs to this subject.[φ]

CHAPTER IV

WHAT ENUNCIATION IS AND WHAT THE TRUE AND THE FALSE ARE

An enunciation is a sentence signifying [something] true or false. And in order to understand this definition, one must first see what the true and the false are, and secondly one must see why it belongs to enunciation alone to signify the true and the false.

As to the first point it should be known that, as is commonly said, truth is the adequation [conformity] of the thing to the intellect. According to Isaac [ben Israeli], the true is said to be what is equated and the false what is not equated. Now this adequation or conformity cannot be a real relation, otherwise true could not be converted with being; for what is so in only one category cannot be a transcendental. Therefore it is a relation of reason and thus the true is logically relative to reason because nothing prohibits it from being in many categories or in all of them. And as to what this conformity may be, I say that some things are in the intellect subjectively, as the intelligible species, the act of understanding and like things. And some things are there objectively, as those things which the intellect understands. Therefore when the thing which is in the intellect objectively is conformed to its own self as it is in the nature of things, then such conformity is called truth. Whence truth consists in this, that the thing is so apprehended by the intellect just as it is in the nature of things, and contrariwise, falsity is the difformity of the thing as it is apprehended by the intellect from itself as it is in its own nature. And for this reason the Philosopher says in Book IV of the Metaphysics[1] that the true is to be what it is and not to be what it is not, but the false is to be what it is not and not to be what it is. Whence when the intellect understands a thing to be such as it is in the nature of things, or not to be such as it is not, such a conformity is called truth. But when it apprehends a thing to be such as it is not, or not to be such as it is, then there is falsity.

It should be known that in that conformity which is called truth there are four things to consider, namely, [a] the thing as it is understood or as it is in the intellect objectively; [b] and the same intellect understanding it; [c] and the act of understanding which is in the intellect subjectively; [d] and the thing as it is in its own nature. And truth in the thing as it is understood, or as it is objectively in the intellect, is prior to [truth] as it is in the intellect, or as it is in the act of understanding, or as it is in the thing as it is in its own nature, for the intellect and the act of understanding are not called true except when they are [concerned] with a true object. Indeed, the intellect is called true when it apprehends the true, and the act of understanding is called true when it is the apprehension of some true thing, and the thing in its own nature is called true when it is natural that is cause in the intellect an apprehension conforming to its own being.

It should be noted that such a conformity of the thing as it is understood to itself as it is in its proper nature can be either in the practical intellect or in the speculative intellect. Indeed, it is in the practical intellect, to wit, when the thing is through its form just as the artist apprehends it through his art. Now, since all natural things through their own forms are conformed to themselves as they are apprehended by the divine art, therefore each thing is called true in so far as it has its proper form, and thus the true and being are converted. But in the speculative intellect there is such a conformity because the intellect understands the thing as it is. For the intellect does not so understand [it] as a thing in the practical intellect, but because the thing is such, so the intellect understands it. And therefore the practical intellect is compared to artificial things as the measure to the measured. Conversely, however, the speculative intellect is compared to those things which it understands as the measured to the measure.

It should be noted that some hold that truth is the conformity of the thing to the intellect informed with a likeness of the thing, while falsity is the difformity of the intellect thus informed to the thing. And this opinion probably can be held. Thus, therefore, it is clear what truth and falsity are, and so forth.

CHAPTER V

THAT TRUTH AND FALSITY ARE ONLY IN ENUNCIATION AND WHY THIS IS SO

As to the second point, namely, why truth and falsity are only in enunciation, it should be known that truth is not in the significant utterance, whether it be a noun, verb, or sentence, except as in a sign, and these are signs of concepts of the intellect. Therefore, according as the true and the false are in the conceptions of the intellect, so they are said to be in these signs. It should be known that, as is said in Book III of the De anima,[1] the operation of the intellect is twofold, namely, the understanding of indivisibles, namely, when the intellect understands the quiddity of a thing in itself, and composition and division, namely, [composition] when it composes one thing conceived through being, or division when it divides [it] through non-being, and truth is found in both operations of the intellect.

Note here, as has been said [85B-186*], that truth is a relation of reason. And the beings of reason are nowhere subjectively, unless it is understood in a wide sense as that to which reason attributes such a relation of reason. Therefore truth has being only objectively, and I say likewise about falsity. Whence if we consider that which is true first, namely, the thing as it is understood, and if we call it true, I say that this truth can be in the first operation of the intellect, for the intellect understands the thing itself as it is in itself and so it understands the true. The intellect, however, does not understand the false in its first operation because either it reaches the nature of the thing and thus it understands the true, or it does not reach it and then it does not know at all. And here there is not properly a difformity of the thing understood to its nature because that thing has not been understood but some other thing [has], and therefore, here there is no falsity which properly implies deception and not solely ignorance. And hence it is that the Philosopher, in Book III of the De anima,[2] says that the intellect comprehending what a thing is is always true. This is not, however, to comprehend completely the truth which is a conformity of one thing to another, namely, of the thing as it is understood and of the thing in its own nature, but it is to know one conforming or true thing.

But in the second operation of the intellect there is truth objectively, perfectly and completely. For to apprehend the truth is to apprehend the conformity of the thing understood to its very self according to its own nature, as has been said [85B-187*]. And this is done by comparing one thing to another, or the same thing to itself, according as it is one thing or another, which cannot be done except through the second operation of the intellect. Therefore, truth does not exist except in a composing or dividing intellect, and I say likewise about falsity.

But by holding the second opinion mentioned above, things will be clearer. For if truth is a conformity of the thing to the intellect informed with a likeness of the thing, truth will be in the first operation of the intellect because such a conformity will be there, yet the true will not be in the intellect then as in a thing knowing the true, for the intellect does not know the true otherwise than by composing or dividing according to its own judgment, which judgment, if it agrees with things, will be true; for instance, when the intellect judges itself to be informed with a likeness of the thing as the thing is. And it is the opposite for the false. And all this pertains to the second operation of the intellect and not to the first.

From what has been said it can be clear that truth and falsity are only in enunciation as in a sign. For if only enunciation is a sign of those things which are objectively in the second operation of the intellect, and only in that [operation] is there the true and the false, then the true and the false will be in enunciation and not in any other utterance, whether it be a phrase [*dictio*] or a sentence. And thus it is clear what enunciation is.

CHAPTER VI

ABOUT ENUNCIATION, CATEGORICAL AND HYPOTHETICAL, AFFIRMATIVE AND NEGATIVE

Now enunciation is divided by Aristotle[1] in three ways, and first as an analogue into its analogates. ψFor he says that some enunciations are one simply and some are one by conjunction.ψ[2] ψThat enunciation which is one simply is the categorical or predicative enunciation. And a categorical enunciation is that which has a subject and a predicate as its principal parts,ψ as "A man is an animal." "Man is the subject, "animal" is the predicate, and this verb "is," which is predicated as the third element [tertio adjaciens], is called a verbal conjunction or copula. ψBut the hypothetical or suppositive enunciation is said to be one by conjunction, as "If it is a man, then it is an animal." This division of enunciation is also of the analogue into the analogates, which is said to be through the prior and the posterior, for what is one simply is prior to what is one by conjunction.ψ

φSecondly, he divides enunciation as a genus into

[its] species, for he divides it into affirmation and negation, which are species of enunciation. For although affirmation is prior to negation, nevertheless enunciation is not predicated analogously of them for this reason, as it is said that it is predicated of that which is one simply and of that which is one by conjunction.

It should be noted that one of the things dividing something else commonly can be prior to the other in two ways. In one way it is prior according to the proper concepts or natures of the dividing things and in the other way according to a greater participation of that common concept which is divided into them. But the first does not destroy the univocity of the genus, as is manifested in numbers, in which the couple according to [its] proper concept is naturally prior to the triad, but nevertheless they particiapte equally in a common concept, namely, number. For the triad, just as the couple, is a multitude measured by one. The second priority does destroy the univocity of the genus and for this reason being cannot be the genus of substance and accident because in the concept of being substance, which is being in itself, has being prior to accident, which is being in another or through another thing. So also in what has been set forth. Although affirmation in the first way, namely, according to its own nature, is prior to negation, nevertheless [it is] not in the second way; on the contrary, they participate equally in the concept of enunciation, for each of them is a sentence signifying the true or the false. According to its own nature, however, affirmation is prior to negation, for affirmation is the enunciation of something about something else, as "A man is an animal," while negation is the enunciation of something different from another, as "A man is not a stone."φ And since enunciation, as has been said [85B-186*], it does not signify a thing immediately, but mediately by a concept of the intellect. φWhence in every enunciation there are three things to consider, namely, that utterance itself which is a sign of the concept of the intellect and that same concept of the intellect which is a likeness of the thing itself and the thing itself. As to the utterance, affirmation is prior to negation since it has less composition than negation,φ for there are more words in "Socrates does not run" than in "Socrates runs," and consequently, there is more composition. φOn the part of the intellect, affirmation, which signifies composition, is prior to negation, which signifies division; for division is posterior to composition [and], just as there is no corruption unless of things generated, so there is no division unless of things composed. And also on the part of the thing, affirmation, which signifies being, is prior to negation, which signifies non-being, just as a condition of a thing is naturally prior to its negation.φ

φAnd the third division of enunciation itself is into universal, particular, indefinite and singular.[3] And the sufficiency of these divisions can be maintained thus: for in enunciation itself one must consider its entire entity which is [made] from a subject and a predicate and their conjunction. And since everything which is is such because it is one numerically, therefore it is considered whether it be one simply or one by conjunction, and this division is said to pertain to the substance of enunciation. Secondly, there is to consider the predicate itself in it, as it is joined to the subject without negation or with negation. And because the predicate is the formal part of the enunciation, therefore this division is said to pertain to the quality of the enunciation, namely, to the essential quality according to which the difference signifies what kind of thing it is, as has been said above [56A-17*]. Thirdly, there is to consider the subject itself in it, namely, as it is predicable of many things or of one, and thus the third division is made, and this is said to pertain to the quantity of the enunciation, for the quantity follows the matter.[φ4]

Whence the verse:

What - categorical or hypothetical.
What kind - negative or affirmative.
How many - universal, particular, indefinite, singular.

And the verse is understood thus: in it there are three interrogative words, namely, "what," which inquires about the substance; "what kind," which inquires about the quality; "how many," which inquires about the quantity. Whence when the question is made through "what," namely, when inquiring about the substance of an enunciation, categorical or hypothetical is answered. When the question is made through "what kind," affirmative or negative is answered. When the question is made through "how many," universal, particular, indefinite or singular is answered. The first division of enunciation will be discussed in the treatise [*sic*] on the hypothetical enunciation.[5] And concerning its second division, enough has been said.

CHAPTER VII

ON THE QUANTITY OF ASSERTORIC CATEGORICAL PROPOSITIONS, NAMELY, THE UNIVERSAL, PARTICULAR, INDEFINITE AND SINGULAR PROPOSITIONS

It remains to speak about the third division, which is that according to quantity.[1] Note here that of the categorical enunciations some are assertoric [de inesse], but others are modal. An enunciation which is about the simple inherence of a predicate in a subject is called assertoric, as "A man is an animal." Now a modal [enunciation is one] in which the inherence of the predicate in the subject is modified, as "It is possible for Socrates to run," or "A man is necessarily an animal." Whence first we ought to speak about the quantity and about the equivalences and oppositions which follow from the quantity in assertoric enunciations, and secondly about them in modal enunciations.

In order to see the quantity of these assertoric enunciations, however, it should be known that φ of those things which the intellect apprehends some are universal, namely, those which are naturally apt to be found in many things, while some are singulars, namely, those which are not apt to be found except in one thing.φ φNow the universal can be considered in two ways: in one way as if separated from singulars, namely, according to the being which it has objectively in the intellect; and in the other way according to the being which it has in singulars.

When the universal is considered in the first way, something can be enunciated about it in two ways: in one way when something which pertains only to an action of the intellect is attributed to it, as when we say, "'Man' is predicable of many things" or "'Man' is a universal" or "'Man' is a species;" for the intellect forms intentions of this kind and attributes them to the nature understood, for example, to man, inasmuch as it compares the same to things which are outside the mind. In another way something is enunciated about the universal taken as such when something is attributed to it as its very nature understood is apprehended by the intellect as one; nevertheless that which is attributed to it does not pertain to the act of the intellect, but to the being [*esse*] which has the very nature understood among things which are outside the mind. For example, if it were said, "Man is the noblest of creatures," for this [nobility] belongs to human nature as it is in singulars, for any singular man is nobler than the other irrational creatures. But, nevertheless, all singular men are not one man outside the mind, as it is said in the above-mentioned enunciation, "Man is the noblest of creatures," where the [ly] "man" stands for all singulars, but only in the acceptance of the intellect is it one.$^{\varphi 2}$ $^{\epsilon}$And because it is not commonly understood that universals subsist outside of singulars, therefore the common way of speaking does not have any word or any sign which is added to the universal according to the aforesaid ways in which something is predicated of it. But Plato, who held that universals subsist outside of singulars, invented some words which$^{\epsilon}$ $^{\varphi}$he used to add to the universals in such ways of predicating, for he used to say, "Man in himself is a species," or "Man as predicable is a species."$^{\varphi}$ $^{\epsilon}$In the second way something is enunciated about a universal according as it is in the singulars themselves, and this in two ways. In one way, when something is attributed to it by reason of the universal itself, namely, something which pertains to its essence or follows from its essential principles, as when it is said, "Man is an animal" or "Man is risible." And in another way, when something is attributed to it by reason of the singular in which it is found, namely, when some individual accident is attributed to it, as when it is said, "A man walks."$^{\epsilon}$ And because this way of enunciating something about a universal falls in the common apprehension of men, therefore certain expressions have been invented for designating this way of attributing something to the universal thus accepted. $^{\varphi}$Whence if something is attributed to it in the first way, namely, by reason of itself as it is universal because this is what it is for something to be predicated about it universally,$^{\varphi}$ $^{\epsilon}$therefore this sign, "every," has been invented which designates that the predicate is attributed to the subject universally as to all that is contained under the subject. But for the same [purpose] in negative predications the word "no" has been invented through which it is signified that the predicate is removed from the subject universally, according to the whole which is contained under it.$^{\epsilon}$ $^{\varphi}$But if something is attributed to it in the second way, namely, by reason of a singular, a particular sign, namely, this expression, "a certain one" or "some," has been invented for designating this in affirmative statements, through which it is designated that the predicate is attributed to the universal subject by reason of this particular. But since the singular signifies the form of something indeterminately, therefore it designates the universal under a certain indetermination, whence it is called a vague individual. But in negative statements some word or some other sign has not been invented but we say, "A certain man does not run" or "Some man does not run."$^{\varphi}$

$^{\epsilon}$Thus, therefore, there are three kinds of affirmation in which something is predicated of a universal. One, in which something is predicated of a universal universally, as "Every man is an animal." The second is that in which something is predicated of the universal particularly, as "Some man is white." The third is that in which something is predicated of the universal without a universal or particular determination,[ε] as "Man is animal." The first enunciation is called universal; the second, particular; the third, indefinite. [φ]To which, if the singular in which something is predicated of a singular, as "Socrates runs," is added, there will be four kinds of enunciation, which can be negative as well as affirmative. And thus it is clear, and so forth.

CHAPTER VIII

ABOUT THE OPPOSITION OF CATEGORICAL PROPOSITIONS EXISTING IN A FIGURE INSOFAR AS [THEY ARE] ASSERTORIC

Now it must be said how the universal, particular and indefinite enunciations mentioned above are opposed.[1] It should be noted that something can be opposed to another in four ways:[2] in one way, relatively, as father and son; in another way, contradictorily, as "Socrates runs," "Socrates does not run;" in a third way, privatively, as sight and blindness; in the fourth way, contrarily, as whiteness and blackness.

Relative opposition has been spoken about in the category of relation.[3]

Now contradiction is an opposition in which according to itself there is no mean, for between being and non-being there is no mean. ψIn order for there to be a contradiction between some things, however, seven things are required: first, that two propositions of which one is affirmative and the other negative be opposed; second, that these enunciations be about the same subject; third, that they be about the same category; fourth, that the predication be not made according to diverse parts of the subject, as when it is said, "Socrates is white of tooth" and "Socrates is not white of hand;" fifth, that there be not a diverse mode on the part of the predicate, as when it is said, "Socrates runs slowly" and "Socrates does not run quickly;" sixth, that there be not a diversity on the part of the measure of place and time; seventh, that there be not a diversity from a relation [*habitus*] to something extrinsic, as when it is said, "Ten men are many in a house and are not many in a theater."ψ[4]

But a privation is a negation in a subject with a natural aptitude.[5] For although blindness negates sight, nevertheless [it does] not [do so] simply, but in a subject naturally apt to see, for it is correct to speak of a blind animal, but not of a blind stone.

ψNow those things are opposed as contraries which, in the same genus, are placed the greatest distance from each other and which, on the other hand, belong to the same subsubject. For whiteness is not opposed to whiteness, but to blackness which is the greatest distance from it.ψ[6]

It should be known that opposition is not predicated of these oppositions as a genus of its species, but as an analogue of its analogates, for the true opposition is opposition simply, which is called contradiction. But the others are called opposition after a fashion [*secundum quid*], and they are oppositions insofar as they express in some way a contradiction, namely, being and non-being. It should be known also that in a contradiction the negation is so opposed to the affirmation that it supposes nothing. In a privation, however, the privation is so opposed to a possession [habitus] that it supposes a subject. But in a contrariety the opposition is such that a subject and some form are supposed, for whiteness is so opposed to blackness that it supposes some subject on account of which it is said that they inhere in turn, and whiteness also supposes some form which neither negation nor privation does.

ψIt should be known that the universal affirmative [enunciation] is opposed to the universal negative of the same subject and same predicate contrarily, whence "Every man is white" and "No man is white" are contraries. The reason is that since, as has been said [88B-204*], those things are opposed contrarily which are the greatest distance from each other, for something is not called black from this alone, that it is not white, but beyond this which is not to be white, which signifies the removal of white, black adds the extreme removal of white. Thus, therefore, that which is affirmed by this enunciation, "Every man runs," must be that which is removed through this negation, "Not every man runs," for it is necessary that the negation remove the way in which the predicate is said of the subject which this quantifier [signum] "every" designates, but beyond this removal the enunciation, "No man runs," adds a total removal which is the extreme distance. Therefore, "Every man runs" and "No man runs" are called contraries with merit.ψ

ψThe particular affirmative and the particular negative, however, are in no way opposed as contraries, that is, by contrary opposition. For contraries differ by an extreme distance, but the particular affirmative and the particular negative are related as means between contraries, and the means are not contraries. And also they are not opposed contradictorily, for, as has been said [88A-201*], this quantifier, "some," which makes a proposition to be particular, designates a universal or common term indeterminately, whence it does not determine it to this singular or to that one. And for this reason an affirmation and a negation will not be in the same singular subject, which is required in a contradiction, as has been said above [88A-203*]. Therefore, they are opposed to each other in no way. Nevertheless, they are called subcontraries since they are contained under the contraries.ψ7

φThe universal affirmative and the particular negative, however, and the universal negative and the particular affirmative are opposed contradictorily. The reason for this is that a contradiction consists in the sole removal of an affirmation through a negation. But a universal affirmative is removed through a particular negative alone, and nothing else is required necessarily, as through this, "Some man does not run," this is excluded, "every man runs." The particular affirmative, however, cannot be removed by the particular negative, since they are not opposed, as has been said [88B-206*]. Therefore it must be removed through the universal negative. In this way, therefore, these, namely, "Every man runs," "Some man does not run" and "No man runs," "Some man runs," are contradictories.[φ] Each particular, however, is called subalternate to its universal. And thus it is clear about the oppositions of propositions in which there are quantifiers and of the singulars. And the indefinite ones follow the rule of the particulars.

CHAPTER IX

ON THE EQUIVALENCE OF ASSERTORIC CATEGORICAL ENUNCIATIONS

Now it remains to speak about the equivalence of these enunciations. Note here that a negative word placed before a quantifier and, consequently, before the enunciation itself, causes the original enunciation to be equivalent to its contradictory. But placed after the quantifier, namely, within the composition of the enunciation, it makes it equivalent to its contrary. But placed before and after the quantifier, it makes it equivalent to its subaltern. Now the reason for these equivalences is that in the aforesaid enunciations one must consider the quantity, namely, universality, particularity and the quality, namely, negation and affirmation. And it is the nature of negation that it denies and excludes everything which is found after it. So, therefore, this enunciation, "Every man runs," is universal and affirmative. If a negative word be placed before it, namely, "Not every man runs," this negation destroys the universality, and so it remains particular or indefinite, namely, without a quantifier, which is equivalent to the particular, and it destroys the affirmation and, consequently, it remains negative. Therefore it is equivalent to this, namely, "Some man does not run," which was its contradictory.

Similarly, should there be this enunciation, "No man runs," it is certain that this enunciation is universal and negative. If a negation be placed before it and it were said, "It is not the case that no man runs," then the negation destroys the universality and, therefore, it will be particular. It also destroys the negation and, thus, it will be affirmative, namely this, "Some man runs," which was its contradictory.

And it will be the same for the particulars. For this, "It is not the case that some man runs," is equivalent to this, "No man runs," and for this reason this, "It is not the case that some man does not run," is equivalent to this, namely, "Every man runs."

Similarly also, if this enunciation be taken, "Every man runs," and a negation be placed after the universal quantifier and it be put in the composition thus, "Every man does not run," then because the negation does not find the quantifier after itself, it does not negate it and, consequently, the enunciation remains universal. The negation, however, destroys the affirmation, and thus a negative universal enunciation is made. Therefore it is equivalent to its contrary, namely, to this, "No man runs." Likewise this, "No man runs," is universal and negative, for the negative quantifier denies the composition of the enunciation. Therefore, if a negation were placed after [the quantifier] and it were said, "No man does not run," then since the negation does not have the quantifier after itself, the enunciation remains universal. And because it was negative as to the composition, it destroys the negation and remains affirmative, namely this, "Every man runs," which was its contrary. Similarly also, if this were taken, "Every man runs," which is universal and affirmative and a negation were placed before and after it [the quantifier] thus, "Not every man does not run," it is certain that the second negation denies its composition. Whence, given that this be negative, namely this, "Every man does not run," therefore a negation placed before it finds after itself the universality which it destroys, and thus it makes it a particular, and it finds the negation which it destroys and makes it affirmative; and it will be this, namely, "Some man runs," which was its subaltern. And it is thus for all the others if a negation be placed before and placed after [the quantifier] in them, because each is made equivalent to its own subaltern, whether it be universal or particular.

It should be noted that it happens sometimes that in the same enunciation there are two universal negative quantifiers, namely, one in the subject and the other in the predicate, as in this, "No man is no animal." I say that this is equivalent to this, "Every man is some animal." The reason is that each of these quantifiers is universal and has a negation in itself. And since a negation is not placed before the first quantifier, the enunciation remains universal. Therefore, the negation included in the first quantifier, which is a universal and negative quantifier, is placed before the negation or second quantifier, which is a universal quantifier and a negative quantifier, and since it finds universality, therefore it destroys universality and it remains particular. It destroys the negation and thus the enunciation remains affirmative, namely this, "Every man is some animal." Or it may be said, as it is commonly said, that "no not" is equivalent to that which is "every," and I mean the "not," namely, the negation which is contained in the second quantifier. But "not no" is equivalent to that which is "some," and "no not" I take for the negation which is in the first quantifier, and thus it remains, "Every man is some animal."

A verse is given here about all the equivalences:
Before - contradictory; after - contrary.
Before and after - subaltern.

Which is understood thus: "before," that is, a negation placed before, "contradictory," that is, makes [it] equivalent to its contradictory. "After," that is, a negation placed after, makes [it] equivalent to its "contrary," that is, contrary. "Before and after," that is, the negation which is placed before and placed after, makes [it] equivalent to its subaltern. And thus it is clear about the equivalences of categoricals.

CHAPTER X

HOW ASSERTORIC CATEGORICAL ENUNCIATIONS SITUATED IN A FIGURE ARE RELATED TO TRUTH AND FALSITY

Now we must speak of how the enunciations mentioned above are related to truth and falsity. Note here that, as has been said above [87B-200*], something can be enunciated, that is, affirmatively, and removed negatively about a universal according as it is in singulars themselves in two ways. In one way, when something is attributed to it by reason of the universal itself, either because it pertains to its essence or because it follows from its essential principles, as when it is said, "Man is a risible animal," and this is called natural or necessary matter. But what is removed from the universal in this way by reason of its own nature, namely, as a universal, is called remote matter or impossible matter, as, "Man is an ass." In a second way, when something is attributed to it by reason of some singular thing in which this universal nature is found, as when it is said, "A man runs," and this is called contingent matter.

It should be known that in natural matter and in remote matter, if one of the contraries is true, the remaining is false and conversely. And the reason is that if that is called natural matter which originates according to the nature of the universal, therefore the same agrees with everything contained under it, so that the universal affirmative will be true, [and] the universal negative, which removes this matter from everything contained under it, will be false necessarily, for that which is, is said not to be, which is false, namely, to say that that which is, is not, or that that which is not, is. Likewise also, in remote matter the universal negative is true because it removes such a predicate from everything contained under such a universal. Therefore, the universal affirmative is now said to be false because it says that that which is not, is, and in the same way it will be related to its particulars subalternate to itself. For since natural matter agrees with everything contained under the universal, therefore in such matter the particular affirmative will be true, but the negative will be false, and it will be related oppositely in removed matter.

But in contingent matter both contraries can be false, and the reason can be known from what has been said. For if in such matter something is not attributed to the universal unless by reason of some particular contained under it, to affirm this about all particulars is false because that which is not, is said to be; likewise also, to deny that of all particulars or singulars is false because that which is, is said not to be. Therefore both are false. But both particulars are true because each can be saved in one singular.

[Now] Aristotle assigns another reason. For as he says, the contraries mutually exclude each other and both these contraries cannot exist at the same time, which is true. Nevertheless, nothing prevents their removal from existing simultaneously; as white and black cannot exist together, nevertheless nothing prohibits the removal of both from existing at the same time, for the exclusion of both is false [sic].

In all matter, whether natural or remote or contingent, if one of the contradictories is true, the remaining one is false, and conversely. For, as has been said [88, 89A-203* to 207*], contradictory enunciations are either singular or one is a universal and the other a particular and they are such that one excludes the other. Whence if one is negative, the other is affirmative, and if the affirmative will be true, it says that that which is, is, and this is true, as is said in Book IV of the Metaphysics;[1] for that that which is, is, and that that which is not, is not, is true. And that that which is not, is, and that that which is, is not, is false. But the negative contradictory to it, which says that that which is, is not, will be false. Likewise, if the negative is true, it says that that which is not, is not, and then the affirmative says that that which is not, is, which is false. And as there is no mean between being and non-being and the one excludes the other, because it is impossible that being and non-being be said and verified of the same thing at the same time, so also as regards contradictories, because the one posits of a thing that it is and the other of the same thing that it is not, and therefore the one always excludes the other. And because the true or the false consists in such being or non-being, as has been said [85B-187*], [and] therefore [they exist] without a mean, if the one is true, the remaining is false, and conversely.

And thus it is clear about the truth and falsity of the assertoric propositions mentioned above, and so forth.

CHAPTER XI

WHAT A MODAL PROPOSITION IS, AND ABOUT ITS QUANTITY

Now it remains to take up or speak about modal propositions. And a mode, as it is taken here, is a determination joined to a thing, that is, a determination made through an adjective. And there are two kinds of adjective, namely, the nominal one, as white and black, and the verbal one, of which kind are adverbs. And because the adverb stands next to the verb and is always dependent upon the verb, therefore it is said to be an adjective of the verb. And so there will be two kinds of mode, namely, the nominal, as when "a fast race" is said, and the adverbial, as when "he runs quickly" is said.

It should be noted that adverbs can determine verbs in many ways. Some determine it by reason of the action or passion which the verb signifies, as "I run quickly" or "I act bravely," and qualitative adverbs do this. But some [adverbs determine the verb] by reason of time, as the temporal adverbs. But others [determine the verb] by reason of manner, as the vocative and optative adverbs. But some others determine the verb by reason of the composition which it makes in the sentence, and these are six, namely, necessarily, impossibly, possibly, contingently, truly and falsely. For when "Socrates runs swiftly" is said, it is signified that his running is swift, but when "Socrates runs necessarily" is said, it is not meant that his running is necessary, but that this composition, namely, "Socrates runs," is necessary, and so also for the other five adverbs just mentioned.

It should be noted that the six adverbs mentioned above make true modal enunciations because they can make modal propositions taken adverbially, as when it is said, "Socrates runs necessarily," and nominally, as when it is said, "For Socrates to run is necessary" [Socratem currere est necesse], and likewise for the others. Now it is true that two of these modes, namely, truly and falsely, do not change the enunciation with regard to its oppositions, equivalences and the like, but they are related in the same way or they are taken in the same way in them as in assertoric categorical [enunciations], and therefore we will pass over them. But because the other four adverbs, namely, possibly, impossibly, necessarily and contingently, change the enunciations mentioned above, therefore we will speak about them. And about these we will see four things presently, namely, the quantity, the quality, the oppositions and the equivalences, since their conversion is treated in the treatise on the syllogism,[1] where the conversion of assertoric categorical enunciations is treated also.[2]

And in order to understand their quantity, it should be noted that some are modal propositions *de dicto*, as "For Socrates to run is necessary" [Socratem currere est necesse], namely, [those] in which the *dictum* [phrase] is the subject and the mode is the predicate, and these are truly modal [propositions] because here the mode determines the verb by reason of its composition, as was said above [90B-217*,218*]. And some are modal [propositions] *de re*, namely, [those] in which the mode is interposed in the *dictum*, as "It is necessary that Socrates run" [Socratem necesse est currere], for the meaning now is not that this *dictum* is necessary, namely, "For Socrates to run" [Socratem currere], but the meaning of this is that in Socrates there is a necessity for running. And this appears more clearly in the case of the possible. For when it is said, "For Socrates to run is possible" [Socratem currere est possibile], the meaning is that this *dictum*, namely, "For Socrates to run" is possible; but when it is said "It is possible for Socrates to run" [Socratem possibile est currere], the meaning is that in Socrates there is the possibility of running.

And there are other enunciations which both seem to be modal and are not, namely, when the mode is the subject and the *dictum* is the predicate, as "A possibility is that Socrates runs" [Possibile est Socratem currere]. The reason of this is that the denomination ought to be taken from the form and the formal [element] in enunciation is the predicate, and therefore it ought to be denominated from the predicate. Therefore when the mode is predicated in enunciation, it [the enunciation] will be modal, but when the *dictum* is predicated it will not be modal.

It should be known that all modal enunciations *de dicto* are singular, regardless of whether the sign in them is universal. Whence this, "For every man to run is possible," is singular, and so also for all the others. The reason of this is that, as was said above [88B-202*], an enunciation is called singular because in it a singular [individual] or a singular term is the subject, as "Socrates runs." But in such enunciations the subject is this determined *dictum*, namely, "For every man to run," which whole is accepted as one definite term. Therefore, all such enunciations are singulars.

But in modal [propositions] *de re* and in those [enunciations] which seem to be modal and are not, the quantity is taken according to that which the terms and signs in the *dictum* are. Whence this, "It is possible for every man to run" [Possibile est omnem hominem currere], is universal, and this, "It is possible that some man runs" [Possibile est aliquem hominem currere], is particular, and thus it is for the modal [propositions] *de re*.[3] Therefore it is evident about their quantity.

CHAPTER XII

ABOUT THE QUALITY OF MODAL PROPOSITIONS WITH REGARD TO AFFIRMATION AND NEGATION

What follows concerns their quality. Note here that in assertoric enunciations there are three things to consider, namely, the subject, the predicate and the composition of one with the other, which are, in a certain way, related in the same manner as in natural things, for in man there is to consider the body and the soul and humanity. The body is the matter, the soul is the form, which is a part of the composite, whence it is the form in respect of the body. But humanity is the form in respect of both, namely, in respect of the body and of the soul. And so also in the proposition. In the enunciation the subject is like the matter, while the predicate is like the form, which is a part of the composite, whence it is as a form in respect of the subject. But the composition is the form of both. Whence in them affirmation and negation are taken according to composition, or division where there is negation. Whence, when there is no negation in the composition, the enunciation will be affirmative, but if there is a negation in it, it is a negative enunciation.

But in the modal [propositions], just as the predicate functions [se habet] in these assertoric [enunciations], so does the mode function because it is as a form in respect of the dictum. And therefore, if the mode is joined to an affirmative dictum, the modal [proposition] will be affirmative; but if with a negative one, the proposition will be negative. For this, "For Socrates not to run is possible" [Socratem non currere est possibile], is affirmative because the composition of the mode with the dictum is affirmed. But this, "For Socrates to run is not possible" [Socratem currere non est possibile], is negative because such a composition is negated. And this appears clearly in their truth and falsity. For an affirmation about the same singular is opposed contradictorily to the negation, and consequently, if the one is true, the remaining is false. But both of these are true, "For Socrates to run is possible" and "For Socrates not to run is possible," because Socrates is able to run and able not to run, and the possibility about each dictum may verified. Therefore one is not affirmative and the other negative.

It should be known that, although a modal enunciation is called affirmative or negative from an affirmed and negated mode, nevertheless each [enunciation] can be varied in four ways, since either it will have both affirmed, namely, the dictum and the mode, as "For Socrates to run is possible;" or both negated, as "For Socrates not to run is not possible;" or the dictum negated and the mode affirmed, as "For Socrates not to run is possible;" or the dictum affirmed and the mode negated, as "For Socrates to run is not possible." And thus it is clear about their quality.

CHAPTER XIII

ABOUT THE OPPOSITION AND EQUIVALENCE OF MODAL ENUNCIATIONS

Now we must consider their opposition. Note here that such modals are varied according to the affirmation and negation in the dictum and in the mode, as has been just said [91-221* to 223*], and thus they make oppositions among themselves. But since diverse modes are mutually opposed to each other, therefore we must first speak about the oppositions of modals according to the diverse modes. Afterwards we shall reduce one modal to another through equivalences, and thus the oppositions of all of them will be clear.

It should be noted that "possible" can be taken in two ways, either in its entire meaning, and then it comprehends the necessary and the contingent, and thus what must be, can be, and what contingently can be, is possible to be. It is taken in another way only as contingent, and it is so taken in these oppositions. Whence, although there are four modal enunciations, nevertheless three of them cause diversity in oppositions and equivalences, because those about the contingent and those about the possible are taken as the same. Therefore we shall speak about these three modes, namely, the necessary, the impossible and the possible. And although, as has been said [91A-220*], when the mode is the subject and the dictum is the predicate, the enunciation is not modal, nevertheless it is quickly reduced to a modal [enunciation]. And so we shall use these enunciations in this way.

It should be known that, as has been said in [the case of] assertoric enunciations [88A-201*], this sign, "every," designates that the predicate of the enunciation is attributed to the subject with regard to all that which is contained under it; while this sign, "no," removes from the subject all that is contained under it, and for this reason the universal affirmative and the universal negative are contraries. So in these modal enunciations, this mode, "necessary," signifies the total inherence of the subject in the predicate, because what necessarily inheres, inheres in every such thing, and therefore it holds the same place, namely, the affirmative modal enunciation about the necessary and the assertoric universal affirmative enunciation.

And as "no" removes the whole, so also "impossible," because what inheres impossibly inheres in no such thing, and therefore the proposition about the impossible holds the place of the universal negative.

And as "some," in affirming, does not posit a total inherence, likewise also, in negating, does not remove the whole which is contained under the subject; so also this mode, "possible," because what possibly inheres, does not inhere in everything, and what possibly does not inhere, does not inhere in nothing, and therefore "possible," in affirming, holds the place of the particular affirmative, and "possible," in negating, holds the place of the particular negative.

Therefore, according to what has been said, these enunciations, "It is necessary to be" [*Necesse est esse*] and "It is impossible to be," are contraries; "It is necessary to be" and "It is possible not to be" are contradictories; "It is impossible to be" and "It is possible to be" are contradictories; "It is possible to be" and "It is possible not to be" are subcontraries; "It is necessary to be" and "It is possible to be" are subalternates; "It is impossible to be" and "It is possible not to not be" are subalternates, as is clear in the following figure.[1]

Having considered these things, their equivalences and oppositions, when they are varied through negations placed in the *dictum* or in the mode, will be clear immediately. For the equivalences of modal [enunciations] are made in the same way as in assertoric enunciations, namely, according to this verse:

Before - contradictory.
After - contrary.
Before and after - subaltern.

For a negation placed before the mode makes it equivalent to its contradictory, whence this, "It is not necessary to be," is equivalent to this, "It is possible not to be." And this, "It is not impossible to be," is equivalent to this, "It is possible to be." But the negation placed after, namely, after the mode, makes it equivalent to its contrary, whence this, "It is necessary not to be," is equivalent to this, "It is impossible to be." And this, "It is impossible not to be," is equivalent to this, "It is necessary to be." "Before and after," that is, the negation placed before and placed after the mode, makes it equivalent to its subaltern, whence this, "It is not necessary not to be," is equivalent to this, "It is possible to be;" and likewise this, "It is not impossible not to be," is equivalent to this, "It is possible not to be."

From what has been said, it can be seen how the oppositions of propositions of the same mode are varied through the negations. For example, in apodictic enunciations this, "It is necessary to be," and this, "It is not necessary to be," are contradictories; and these, namely, "It is not necessary not to be" and "It is necessary to be," are subalterns; and thus the other modal enunciations are respectively related by this verse, as is clear enough:

Amabimus, edentuli, illiace, purpurea.[2]

CHAPTER XIV

ABOUT HYPOTHETICAL ENUNCIATION AND ITS THREE SPECIES

Now it remains to speak about hypothetical or suppositive enunciations, which are the same. Now the hypothetical enunciation is defined thus: a hypothetical enunciation is one which has two categorical [enunciations] as its principal parts, as, "If the man runs, the man moves." It is clear that this, "the man runs," is one categorical enunciation, and this, "the man moves," is the other. And I mean principal parts, because the terms are the principal parts of a categorical proposition, yet they are not the principal parts of the hypothetical proposition, but the remote ones, as stones are the remote parts of a house. And in this the hypothetical enunciation differs from the categorical enunciation, for the principal parts of the categorical enunciation are the terms and the principal parts of the hypothetical enunciation are two categorical enunciations. And there is another difference between categorical and hypothetical propositions, because in a categorical enunciation the subject receives the name of the predicate, for when "Man is an animal" is said, "man" receives the name of "animal" since man is said to be an animal. It is not thus, however, in hypothetical enunciations, because one thing is not predicated about another, but only something is said to be if another thing has been. For example, when it is said, "If she has borne a child, then she has known a man," the meaning is not that to bear is to know a man, but the meaning is that she could not have borne a child unless she had known a man. Likewise also, when we say, "If it is a man, then it is an animal," the meaning is not that man is an animal, but the meaning is that if something is a man, then it is necessary that something be an animal.

Now the hypothetical proposition is divided into three species, because some are conditional, some are disjunctive and some are copulative [conjunctive]. The conditional is that in which two categorical propositions are joined through this conjunction, "if," as "If he is a man, then he is an animal." And this conditional can be made on the part of the subject as well as on the part of the predicate; on the part of the subject, as if it were said, "If a man runs, then an animal runs;" but on the part of the predicate, as if it were said, "If a man runs, then a man moves."

Now the first proposition or categorical enunciation which is in these hypothetical enunciations is called the antecedent, but the second is called the consequent, and for this reason it [the hypothetical enunciation] is called a consequence.

And rational enunciations, as "Socrates is a man, therefore Socrates is an animal," and every causal enunciation, as "Because Socrates is a man, Socrates is an animal," and temporal ones, as "When Socrates is a man, Socrates is an animal," and all like enunciations are reduced to conditional enunciations.

It should be noted that Ammonius poses two [kinds of] hypothesis; one is when something impossible is supposed, to which, nevertheless, something impossible follows necessarily. For example, it having been supposed that four is three, the number four will be odd. For it is a fact that the hypothesis supposes an impossibility and an impossible [consequence] is inferred from it; yet, given the hypothesis [*stante hypothesi*], the consequence is inferred necessarily. From all this it can be understood that a conditional enunciation can be true even if both of its parts are false. Whence this is true, "If man is an ass, then man is capable of braying," yet each of the categorical enunciations is false. And the second hypothesis is when something is said to be or not to be if something has or has not been, as "If it is a man, then it is an animal," or "If it is a man, then it is not a stone."

From what has been said, it is plain that the truth of an hypothetical enunciation is in the consequence of the terms which are in the consequent upon the terms which are in the antecedent. For since "animal" follows from "man" necessarily, it is certain that whatever has been a man has been an animal, and if "moving" follows from "running," therefore it follows that whatever runs, moves. Therefore, if it is a man, then it is an animal, and if he runs, then he moves. Therefore, to whomever "running" is attributed truly or falsely, "moving" should also be attributed. Whence this is true, "If an immovable thing runs, then the immovable thing moves." And for this reason it is said that for its truth it is required that the antecedent cannot be true without the consequent [being true], because such is the necessity of the consequent to the antecedent, that as the antecedent is situated, so is the consequent situated. But if it were situated otherwise, namely, such that the antecedent were true and the consequent false, then the consequence would be false, because the term placed in the consequent would have no necessary connection with the term placed in the antecedent, as this, "If the man is white, then the man is musical." It is certain that this is false, for "musical" does not follow necessarily from "white." And hence it is that every true conditional is necessary and every false one is impossible, because, as has been said [92B-230*], the term of the consequent follows necessarily from the term of the antecedent.

And how the conditional enunciation is varied by affirmation and negation will be spoken of when the hypothetical syllogism is discussed.[1]

Now the disjunctive enunciation is that in which two categorical enunciations are joined through a conjunction of the disjunctive species, as this, "Either the animal is healthy or it is ill." And the truth of the aforesaid enunciation is that if one [disjunct] is posited, the other is removed, and if one is removed, the other is taken. Whence it is seen that this [enunciation], "Either he is healthy or he is ill," has the same value as this conditional, "If he is not healthy, then he is ill." And although it is true in the matter just mentioned, nevertheless these two are not always equivalent in truth in every matter. For the conditional denied on one side and affirmed on the other is saved in contradictories, contraries and disparates, and it will always be true. For this is true, "If it is white, then it is not black," and nevertheless this is false, "Either it is white or it is black," for something can exist which is neither white nor black; and thus it is also for the disparate ones. Thus the disjunctive enunciation differs from such conditionals. Whence for the truth of a disjunctive [proposition] it is required that the matter be such that one thing is posited wholly and the other removed, or conversely, and for this reason it is required for its truth that either part of it be true. And in case both of its parts are true or false, the disjunctive enunciation itself will be false.

And the copulative enunciation is that in which two categorical enunciations are joined by a copulative conjunction, as "Socrates runs and he moves." In this enunciation no condition is posited, but only a conjunction of the enunciations. And because the copulative conjunction always ought to join like things, in case the antecedent is true, it is also necessary that the consequent be true, and conversely.

And so it is plain how the said hypothetical enunciations are related to truth. For conditional can be true when both of its parts are false. But the disjunctive is true when one of its parts is false. But in order for the copulative to be true, both of its parts must necessarily be true.

And thus it is clear about hypothetical enunciations. However, if something about them has been omitted, it will be mentioned when the hypothetical syllogism is discussed, and so forth.

TREATISE IV[1]

ON THE SYLLOGISM ITSELF

CHAPTER I

WHAT THE SYLLOGISM IS AND WHAT THINGS ARE REQUIRED TO CONSTITUTE IT

Now we must speak about the third part, that is, about those things which pertain to the third operation of the intellect. For although, as has been said [83A-174*], [only] two operations of the intellect are discussed by the Philosopher, namely, the understanding of simple things and composition or division, nevertheless a third operation is added, which is the movement [discursus] from one composition or division to another. And this is done through argumentation. Now argumentation is the significant utterance [oratio significativa] of the movement of the reason from something known to something unknown, or from something better known to something less known.

And there are four species of argumentation, namely, the syllogism, the enthymeme, induction and example.[2] Whether this division be of the genus into its species or of the analogue into its analogates does not concern us at present. And since the syllogism is more complete than all the other species and the other species of argumentation are reduced to it as the incomplete to the complete, therefore we must discuss it.

Now the syllogism is defined thus: the syllogism is a discourse in which, from some things posited and conceded, something else necessarily follows through that which has been posited and conceded. Here "discourse" is the genus of syllogism. For, as has been said in the treatise "On Enunciation" [85A-183*], nothing prohibits an utterance from being a plurality and a unity of the kind which it is in the syllogism. And in this which says, "from some things posited," it refers to the propositions of the syllogism, and through that which says, "something else follows necessarily," it refers to the conclusion. Whence it is necessary to know what a proposition is. Now a proposition, as it is taken here, is an enunciation from which, when posited, something else follows;[3] for not every enunciation is a proposition, but only that which is placed in some species of argumentation and from which a conclusion follows. For example, when it is said, "Every man is an animal, every risible thing is a man, therefore every risible thing is an animal," this [expression], "Every man is an animal," is a proposition, and likewise this, "every risible thing is a man," for they are proposed in order that this, "every risible thing is an animal," may follow from them. But this expression, "every risible thing is an animal," although it is an enunciation, for it is evident from the terms, yet is not a proposition.

Now a term is that into which a proposition is resolved, as subject and predicate. For when I say, "Man is an animal," "man" is the term which is called the subject and "animal" is the term which is called the predicate. It should be known that, although the proposition is composed of terms and is resolved into them, still not the composition but the resolution of the proposition is put in the definition of the term. And the reason for this is that, as Boethius says in his *Topics*, logic has two parts, namely, the inventive and the judicative. And invention is a thinking out of true and probable things which render one part of a contradiction probable. And the probable is that which seems to be [true] to all men or to many men or to wise men, and to wit, to those wise men, either to all or to many or to the most well-known. And two books serve this part of logic, namely, the *Topics* and the *Sophistical Refutations*.

Now judgment, as it is taken here, is the right determination of reason in those things of which there is judgment. And the reason determines rightly when it resolves the results of principles into their principles. And therefore knowledge, which is the right determination of things knowable, is through causes, that is, when reason resolves the caused into [its] causes, and on that account this part of logic, that is, the judicative, is called the analytics or resolutions, because it resolves the results of principles into their principles. And two books serve this part of logic, namely, the *Prior Analytics* and the *Posterior Analytics*. And since we are directing our attention here to the subject of the book, *Prior Analytics*, therefore the term is defined here by the resolution of the proposition.

Now the subject [of a proposition] is that about which something is said, but the predicate is that which is said about something else, whether it is said by the mind or the reason, or by the mouth or the voice. And the term is so called because the proposition is terminated through it in this way, that it does not proceed any further.

And in this treatise we shall speak about the syllogism itself. Now the syllogism itself is that in which the matter in which such or such a syllogism is made is not considered, that is, it is not considered whether such a matter is probable or necessary, but the syllogism is considered only with respect to its ordering. Now in all matter, when the premisses are true or probable, a true or probable conclusion always follows. And that such an ordering is good [that is, valid], is proved through two self-evident principles. And here I call "principle" the first self-evident propositions. And these principles are the *Dictum de omni* and the *Dictum de nullo*.[4] Now the *Dictum de omni* is that nothing is taken under the subject about which the predicate is not said, while the *Dictum de nullo* is that nothing is taken under the subject about which the predicate is not denied. But it will be better to speak about these things further on.

It should be known that, since syllogisms are varied through diverse figures, as will be said below,[5] therefore some syllogisms cannot be proved immediately through these two principles. And for this reason such syllogisms require another principle through which they can be reduced to the *Dictum de omni* or to the *Dictum de nullo*. And the principle is this:[6] if from the opposite of the consequent there is inferred the opposite of the antecedent of the first conclusion, then the first consequence was valid. Whence all those syllogisms in which the *Dictum de omni* or the *Dictum de nullo* cannot be saved directly are reduced by this third principle to a form in which the *Dictum de omni* or the *Dictum de nullo* is saved, and this reduction is called "per impossibile" by some, but "through the conversive syllogism" by the Philosopher.

And likewise, the syllogisms just mentioned are reduced to these two principles by the conversion of [their] propositions. But since the conversions are not proved to be valid except through the third principle, therefore it must be said that these syllogisms are reduced to those two principles only in virtue of the third principle. Now let us speak about how the conversions may be made and proved through the third principle, first in assertoric propositions and then in modal propositions.

CHAPTER II

ON THE CONVERSION OF ASSERTORIC PROPOSITIONS AND ITS SPECIES

Now the conversion of propositions, as it is taken here, is making a predicate from the subject and a subject from the predicate, so that what has been converted being true, so also that into which it is converted is true. For example, if this proposition, "Every man is an animal," be converted into this, "Every animal is a man," the subject is correctly made from the predicate and the predicate from the subject; nevertheless the first proposition is true, but the second is false, and therefore such a conversion is not valid. However, there are two kinds of conversion among the propositions of definite terms, about which we are speaking here, namely, simple conversion and accidental conversion. And a conversion is said to be simple when the subject is made from the predicate and the predicate from the subject, the second proposition remaining in the same quantity and quality as the first. But it is called accidental when the predicate is made from the subject and conversely, the quality of the proposition remaining the same, but the quantity having been changed. Universal negative and particular affirmative propositions are converted in the first way; universal affirmative and, as some say, universal negative, propositions are converted in the second way. Nevertheless, it is not necessary to posit this. For, if from this, "No man is a stone," it follows that, "No stone is a man," and this is true, then it follows necessarily that this is true, "Some stone is not a man." For as has been said above [88B-206*], the universals being true, the particulars are always true, although not conversely.

First let us prove simple conversion, beginning with the universals. And since, as has been said [94B-238*], in such syllogisms and their propositions, one is not concerned with the matter in which they are, therefore we shall use transcendent terms, in whose place any terms whatever can be substituted. Therefore, let this proposition be converted, "No b is a." And let it be always assumed that for "b" and for "a" such significant terms are taken as will make a true proposition, as if "man" is taken for "b" and "stone" for "a." Therefore, I say that the proposition mentioned above is converted into this, "No a is b," which I prove through the said third principle thus: when the opposite of the antecedent is inferred from the opposite of the consequent, then the first consequence was valid, but it is thus in the proposition, therefore, and so forth. Therefore, when I say, "No b is a, therefore no a is b," I make a consequence whose antecedent is, "No b is a," but whose consequent is, "No a is b." Now let us see if the opposite of the antecedent is truly inferred from the opposite of the consequent. Now to this proposition, namely, "No a is b," there can be two opposites, namely, the contrary and the contradictory. Therefore, let us take its contradictory, namely, "Some a is b," for the particular affirmative and the universal negative are contradictories, and from this, namely, "Some a is b," this follows, namely, "Some b is a," as I shall prove. But this, "Some b is a," and that which was the antecedent, namely, "No b is a," are contraditory opposites. Therefore the opposite of the antecedent follows from the opposite of the consequent. Therefore the first consequence, which we call conversion, was valid.

Now it is necessary to prove how from this, "Some a is b," this follows, "Some b is a," and this is proved through an expository syllogism. Therefore I shall assume the first propositions in significant terms, and as we say, "Some a is b," let us say, "Some man is an animal," and as we say, "Some b is a," let us say, "Some animal is a man." Let us accept the first, namely, "Some man is an animal." Let that man and this animal be designated [i.e., given names], for if this is true, "Some man is an animal," it is necessary that this be true in some designated man, for instance, Socrates or Plato; and if it should be true in no designated man, it would not be true in any way. Therefore let that thing be designated in which animality and humanity are designated, and let it be called Socrates. Now let the expository syllogism be made thus: "Socrates is this man. Socrates is this animal. Therefore, this animal is this man. And, consequently, some animal is a man." Therefore, from this, "Some man is an animal," which was taken in place of this, "Some b is a" [sic], it follows that, "Some a is b" [sic]. And from this, "Some a is b," it follows that, "Some b is a," and this is what we wished to say. And thus it is evident about the conversion of the universal negative.

The particular affirmative is converted simply, as, "Some b is a, therefore some a is b," and it is proved through the same principle. Therefore, the opposite of the antecedent is inferred from the opposite of the consequent, and, therefore, the first consequence or conversion was valid. And this conversion can be proved through the expository syllogism, as has been said [94B,95A-242*,243*].

Now the universal affirmative is converted accidentally, thus: "Every b is a, some a is b." And it is proved in the same way. For the opposite of this, "Some a is b," is this, "No a is b," which is converted into this, "No b is a." And this is the contrary of the first, which was, "Every b is a." Therefore, the opposite of the antecedent is inferred from the opposite of the consequent. Therefore the first consequence or conversion was valid.

But the particular negative is not converted, because the opposite of the antecedent is not inferred from the opposite of the consequent. For example, let this be the proposition to be converted, "Some b is not a." Therefore, let it be converted, since it is converted either into a universal negative or into a particular negative. Into a universal negative thus: "Some b is not a, therefore no a is b." The opposite of this is either "Every a is b" or "Some a is b." But both of these propositions, namely, "Every a is b" or "Some a is b," are converted into this, "Some b is a," which is not the opposite of the antecedent, which was, "Some b is not a," because subcontrariety is not an opposition, as was made evident above [88B-206*]. Therefore, this conversion is not valid. And the same also follows if it is converted into the particular, namely, into this, "Some a is not b," whose opposite is "Every a is b," which is converted into this, "Some b is a," which is not properly the opposite, as has been said [88B-206*].

And that such a conversion is not valid is also evident because it does not hold for all matter and it can be shown in significant terms. For although this follows, "Some stone is not a man, therefore some man is not a stone," nevertheless this does not follow, "Some animal is not a man, therefore some man is not an animal," for indeed every man is an animal.

Some verses about the conversions mentioned above are made thus:

Feci - are converted simply, *eva* - accidentally. The universal affirmative is taken here by "a," the universal negative by "e," the particular affirmative by "i," the particular negative by "o." And the verse is construed thus: "fe," that is, the universal negative, and "ci," that is, the particular affirmative, are converted simply. "e," that is, the universal negative, and "va," that is, the universal affirmative, are converted accidentally. And thus it is clear about the conversion of assertoric propositions.

CHAPTER III

ABOUT THE CONVERSION OF MODAL PROPOSITIONS AND THEIR DIFFERENT MODES

Now we must speak about the conversion of modal propositions. It should be known that propositions about the necessary and the impossible are converted in the same way and proved through the same principle as assertoric propositions. But propositions about the possible and the contingent are not converted in the same way. But since oppositions are not taken in the same way in modal propositions as in assertoric propositions, therefore it is necessary to show the proofs of the propositions mentioned above, and as we show them for propositions about the necessary, thus will they be for propositions about the impossible. Therefore let this be the proposition to be converted, "It is necessary that no b be a" [Necesse est nullum b esse a], which is converted into this, "It is necessary that no a be b," since from the opposite of the second proposition is inferrred the opposite of the preceding one; for the opposite of that, "It is necessary that no a be b," is this, "It is not necessary that no a be b," but that is equivalent to this, "It is possible that some a be b." For "It is not necessary not to be" is equivalent to this, "It is possible to be," since "not no" is equivalent to "some." Therefore this, "It is not necessary that no a be b," is equivalent to this, "It is possible that some a be b." Now from this it follows that, "It is possible that some b be a," which can be proved through an expository syllogism, as has been said above about the particular affirmative [94B,95A-242*,243*]. But this, "It is possible that some b be a," is the contradictory of the antecedent, which was, "It is necessary that no b be a." And therefore the opposite of the antecedent is inferred from the opposite of the consequent. And therefore the first consequence or conversion was valid.

The particular affirmative is converted in the same way and proved through the same principle, thus: "It is necessary that some b be a, therefore it is necessary that some a be b," the opposite of which is, "It is not necessary that some a be b," which is equivalent to this, "It is possible that no a be b," which is converted into this, "It is possible that no b be a." For "possible" is not taken here as being the same as "contingent," since it is not converted, as will be evident below; but "possible" is taken now in its entire signification, as it comprehends the necessary and the contingent, as was said above in another treatise [91A-224*]. And this, "It is possible that no b be a," is contradictory to this, "It is necessary that some b be a," which was the antecedent. And in the same way also the conversion of the universal affirmative is proved accidentally, namely through a conversion made accidentally.

It should be noted that this is the difference between the concrete accidental predicates and the substantial ones or their subjects, for on the part of the predicate they express the form, but on the part of the subject they express what has that form. For when I say, "Socrates is white," the "white" expresses only the form of whiteness; but when I say, "Some white object is Socrates," the "white" expresses that which has whiteness. Therefore, in such matter, the conversion of affirmative modal [propositions] is lacking. For this is true, "It is necessary that something white be a body," but nevertheless this is false, "It is necessary that some body be white," since this is contingent. And thus it is evident about the conversion of propositions about the necessary. And those about the impossible in its full signification are made in the same way.

However, the conversions of propositions about the contingent, and about the possible as it is the same as the contingent, are made in the terms, namely, as "It is contingent that no b be a," is converted into this, "It is contingent that every b be a." Whence these conversions are related in another and opposite way to the conversions of assertoric propositions and of the modal propositions mentioned above. For in those the predicate is always made from the subject and conversely, and the same quality is always preserved in them, although not always the same quantity, but in these, what was the subject or the predicate remains in the same way and the quality is changed. And the reason for this is that, as has been said [94B-240*], that conversion is valid in which, if there is truth in the converted proposition, so there is in that into which it is converted.

Now if the proposition about the contingent were converted so that a predicate is made from the subject and conversely, the truth would not be found in every matter; but in some matter the antecedent would be true and the consequent false. Therefore the conversion would not be valid. For example, in significant terms, "It is contingent that no man be white," and this is true because this can happen. If it should be converted thus, "It is contingent that no white thing be a man," this is false. Now let it be assumed that Socrates is white. It never could be contingent that Socrates is not a man. And this conversion is made in a different quality. For a thing can be contingent in three ways, either in respect to every case, as "It is contingent that man be white," or with respect to the majority of cases, as "It is contingent that man have two eyes," or with respect to the minority of cases, as "It is contingent that man have one eye." And it is called contingent in every case because whatever can be present can also be removed. Therefore the negative and the affirmative are true at the same time. And the contingent in the majority of cases is not converted into the contingent in the majority of cases, but into the contingent in the minority of cases. Whence this, "It is contingent that no man be blind," is converted into this, "It is contingent that every man be blind." For the first is contingent in the majority of cases, while the second in the minority of cases. The contingent in the minority of cases is converted in the same way as the contingent in the majority of cases and their conversion is taken in the same way as was said about the contingent in every case. For if something happens in a few cases, it is lacking in many. And thus it is evident about the conversion of modal propositions.

It should be noted that some propositions are encountered which lack any conversion since they do nothing for the proposed end, because none of them can be placed in any of the syllogisms which are to be reduced, it is evident that they need no conversion and thus it is superfluous to treat of them.

CHAPTER IV

ABOUT OSTENSIVE ASSERTORIC SYLLOGISMS WITH REGARD TO MOOD AND QUANTIFIER

These things having been discussed, now we must speak about the syllogism; first about assertoric syllogisms, secondly about modal syllogisms and thirdly about hypothetical syllogisms. Now of assertoric syllogisms, some are ostensive, while some are reduced to the impossible. Whence we must first speak about the ostensive syllogism.[1]

It should be known that every ostensive syllogism is composed of three statements, two of which are called propositions or premisses, while the last is called the conclusion. For example, "Every animal is a substance, every man is an animal, therefore every man is a substance." These two, namely, "Every animal is a substance" and "Every man is an animal," are the two propositions, of which the first, namely, "Every animal is a substance," is called the major, while the second is called the minor or the assumed. And the third statement, namely, "Every man is a substance," is called the conclusion. And although the three statements mentioned above are complete, being composed of a subject and a predicate, nevertheless they have only three terms,[2] which are "man," "animal" and "substance." And the reason is that all these terms are taken twice. Whence the term taken twice in the premisses is called the middle, the term taken with the middle in the major proposition is called the major extreme and the term taken with the middle in the minor proposition is called the minor extreme. But in the conclusion the major extreme is taken again with the minor, namely, so that if the conclusion is direct, the major extreme is predicated of the minor, but if it is indirect, it is done conversely. Whence the middle term is never placed in the conclusion.

And in order to understand the reason for these names, it should be known that man is rational. He is called rational, however, and not intellectual, because the intellect apprehends without being discursive, while the reason, although it is not a power other than the intellect, nevertheless is called reason because whatever it apprehends, it apprehends discursively. Therefore it does not come to a complete apprehension of anything unless it passes discursively from the better known to the less known. For example, in order to know completely what man is, first we must understand what a being is, then what a substance is, then what a body is, then what an animate body is, then animal, then rational, and thus we arrive at a cognition of man discursively. Now whether such a movement is made without composition, namely, by understanding a being, a substance, a body, not assuming "is" [the copula] here, (so that, namely, we would not say, "This *is* a man"), or whether it is made with a composition, has no bearing on the question. It suffices that we understand by moving discursively and that such a discursive movement is from the better known to us to the less known.[3] The things better known to us, however, are the more universal things, as is said in Book I of the *Physics*,[4] because they are more confused. Therefore, our movement in our cognition is from the more universal to the less universal. Whence we know being better than and prior to substance, and substance better than and prior to body, and body better than and prior to animate body, and animate body better than and prior to animal, and animal better than and prior to man. Now the syllogism is about such a movement, for it is, as Boethius says, nothing other than a statement or a group of statements in which there is such a movement. And although in such a movement there can be many middle terms and many premisses [leading to] one conclusion, for example, "Every substance is a being, every man is a substance, which is a body, which is an animal, therefore every man is a being," nevertheless since the middle term is always the middle between two extremes, we comprehend many syllogisms in such a movement. Therefore, one syllogism has one middle term and two extremes.[5] And in the aforesaid movement, since the first [term], which is more universal and, consequently, better known, occurs first to the intellect, it is called the major extreme. For it is called an extreme because it occurs first to the intellect, and major because it is more universal and better known. And the second term which occurs to the intellect is that which is not so universal, yet holds second place after the first in universality, as does body after substance. And we already know that the first term inheres [is] in the second term, and this is called the major proposition because it is prior in cognition. But since we do not know if the second term inheres in any less universal term, the reason moves about and discovers that body inheres in animal, where it stops, and this is the minor proposition, and immediately it understands that substance inheres in animal, and this is the conclusion. Certainly, among these terms, "body" was the middle term and it was the reason that we understood substance to be in animal. Now the last term in the aforesaid movement was "animal," where the reason stopped, and for this reason it is called the minor extreme. For it is called an extreme because the movement of reason stopped there; while it is called minor because it is less universal and, consequently, less known to us. Therefore we have the reasons for these names and the accounts of the terms of the premisses and of the conclusion. From what has been said, what the Philosopher says in Book I of the Posterior Analytics[6] can be evident, that the major proposition is known prior to the conclusion by nature and in time; by nature, because its terms are more universal, as has been said; while in time, because in the movement of reason I understood substance to inhere in body prior to [understanding] that it inheres in animal; while the minor proposition is known prior [to the conclusion] by nature, yet not in time; by nature, since the cause is prior to the caused, and the propositions are the cause of the conclusion, and also because this was a prior movement of reason, namely, from the middle term to the minor extremity; nevertheless, it is not known prior [to the conclusion] in time, for I knew substance to inhere in body at the same instant in which I knew body to inhere in animal, I knew substance to inhere in animal. And thus it is clear about the parts of the syllogism and their names.

Now syllogisms have figures and moods. And the order of the three terms according to subject and predicate is called here the figure. For just as in mathematics the ends of lines placed in one way or another vary the species of figures, (for if the three points which make a triangle are equally distant from each other, there will be the species of triangle which is called equilateral or isopleuros; but if two will be equally distant from a third and if the distance between them is less or greater than their distance from the third, there is the species which is called isosceles; but if all the distances of the points are unequal, there is the species of the triangle which is called graded or scalene;) so three figures of the syllogism are made according to the diversity of these three terms in the subject and in the predicate, although in a different way than in the plane figures just mentioned.

For if the middle term is the subject in one proposition and is the predicate in the other, [the syllogism] is said to be in the first figure, and rightly so because then the middle term is truly the middle since it partakes of the nature of both extremes, namely, of the subject and of the predicate; for it is the predicate and it is the subject, as has been said. But if the middle term is the predicate in both propositions, [the syllogism] is said to be in the second figure, because, although the middle term is not truly the middle partaking of the nature of a subject and of a predicate, nevertheless, since it is more worthy to be a predicate than to be a subject, therefore this figure holds second place. But if the middle term is the subject in both propositions, [the syllogism] is said to be in the third and last figure, because in it the middle term does not stand in the middle, as in the first, and is always the subject, which is more unworthy. There cannot be any more figures because three terms in two propositions cannot be varied in any more ways. Whence the verse:

Sub. pred. - first.
Twice pred. - second.
Twice sub. - third.

Which is construed thus: "first," that is, in the first figure, the middle term is "sub.," that is, the subject, and "pred.," that is, the predicate. "Second," that is, in the second figure, the middle term is "pred.," that is, the predicate, "twice," that is, in each of the premisses. "Third," that is, in the third figure, the middle term is "sub.," that is, is the subject, "twice," that is, in each of the premisses.

But mood, as it is taken here, is the arrangement of the two propositions in a definite quantity and quality, and it is called a mood because it is a certain accidental determination of these propositions of the syllogism, and so forth.

CHAPTER V

THE USELESS SYLLOGISMS IN EVERY FIGURE

It remains now to speak about these syllogisms. Note here that, as has been said above [94A-238*], we are considering the syllogism itself in this book, that is, the form of the syllogism itself insofar as it is a syllogism, without application to some matter, and therefore that will be the true form of the syllogism which, when applied to any matter whatsoever, always [will be such that] if the premisses are true, a true conclusion will follow from them. But if there is a syllogism in some matter when from premisses being true a false conclusion follows, although in some other matter a true conclusion might follow, such will not be a true syllogism, but is called a useless combination [invalid argument].

Now of these useless combinations, some can be made in all figures, but some in two figures or in only one figure. There are four which are made in every figure. The first is if both the premisses are [2]negative; the second, if both the premisses are[2] particular; the third, if both the premisses are indefinite; and the fourth, if both the premisses are singular. For such syllogisms or arguments, in whatever figure they are made, can conclude to something true in some matter and to something false in other matter, and for this reason they are called useless. For example, from two negative premisses in the first figure, sometimes a truth is concluded thus: "No man is a stone, no ass is a man, therefore no ass is a stone." But sometimes a falsehood is concluded thus: "No man is a stone, no pearl is a man, therefore no pearl is a stone," and the conclusion is false because every pearl is a stone. And the same can be done also in the second and third figures. One general rule is given about this and the three other useless arguments, namely, in all figures nothing follows from pure negative, particular, indefinite and singular premisses.

But there are two useless combinations which sometimes are not in all the figures, but [only] in some [figures]. One is that which occurs in the first and third figures, namely, when the minor proposition is negative, while the second is that which occurs in the first and second figures, namely, when the major proposition is particular. And general rules are given about these, namely, in the first and third figures, the minor being negative, nothing follows. It should be noted that in the first figure this ought to be understood about syllogisms concluding directly. For there are in that figure two moods of the syllogism concluding indirectly in which the minor is negative and nevertheless they are not useless combinations. And the second rule is that in the first and second figures, the major being particular, nothing follows. And likewise in the first figure it is understood about syllogisms concluding directly.

And two other general rules are given, of which the first is that if one of the premisses is negative, the conclusion is also negative. And the second is that if one of the premisses is particular, then the conclusion will be particular. The reason is, as has been said [96B-253*,254*], that the major extreme inheres in the minor in the conclusion in virtue of the middle, that is, insofar as it inheres in the middle in the major proposition, and the middle inheres in the minor extreme in the minor proposition; or if the inherence of these terms is taken in another way, as is done in some figures, then in the same way in which the middle inheres in one of the extremes, or conversely, one extreme will inhere in the other. But if either of the premisses is particular, then the middle ought to inhere in the extreme, or the extreme in the middle, particularly. Therefore the conclusion which says that an extreme inheres in an extreme will be particular. And this suffices for the second rule in affirmative syllogisms.

Now in negative syllogisms it is concluded in the same way by virtue of the middle. For if the middle inheres in one extreme, and, conversely, is removed from the other, then it is necessary that one extreme be removed from the other, and thus the conclusion will be negative and this as to the first rule. And also in the same syllogisms, if the

middle inheres particularly, or conversely, or if it is
75 removed particularly from some extreme, or conversely, it
follows necessarily that an extreme is removed from an
extreme particularly, and thus the conclusion will be a
particular negative. Therefore, the rules mentioned above
are true, and so forth.

CHAPTER VI

ABOUT THE SYLLOGISMS OF THE FIRST FIGURE CONCLUDING DIRECTLY, AND ABOUT THE SYLLOGISMS OF THE SECOND FIGURE

Now we must speak about the useful syllogisms, and first about those which are in the first figure, and these are four. The first is when the major and minor propositions are universal affirmative propositions and a universal affirmative conclusion follows thus: (putting it in transcendent terms), "Every b is a, every c is b, therefore every c is a." And the syllogism is proved through that principle which is the Dictum de omni. For, as has been said [94A-239*], the Dictum de omni is that nothing is taken under the subject about which the predicate is not said. And it is thus in the proposed example, therefore, and so forth. Therefore, let us put it in significant terms and let "b" be "animal," and "a" be "substance" and let "c" be "man." Therefore, a syllogism is made thus: "Every animal is a substance, every man is an animal, therefore every man is a substance." And it is certain that if this, "Every animal is a substance," is true, nothing will be taken under animal about which substance is not said. Therefore, if every man is an animal, then every man is under animal. Therefore it ought to be accepted that, as substance is predicated about animal, so it is predicated about man.

The second mood is when, from a universal negative major and a universal affirmative minor, a universal negative is concluded thus: "No b is a, every c is b, therefore no c is a," and it is proved through the other principle, which is the Dictum de nullo. Now it is shown in significant terms thus: let "b" be "animal," while "a" is "stone" and "c" is "man." For, if no animal is a stone, nothing will be taken under animal from which stone is not removed. For as "every," which is the universal affirmative quantifier, is distributive and distributes affirmatively as to the singulars contained under that to which it is joined, so also "no" distributes negatively as to such singulars.

The third mood is when, from a universal affirmative major and a particular affirmative minor, a particular affirmative is concluded thus: "Every b is a, some c is b, therefore some c is a," and it is proved through the Dictum de omni.

The fourth mood is when, from a universal negative major and a particular affirmative minor, a particular negative is concluded thus: "No b is a, some c is b, therefore some c is not a," and it is proved through the Dictum de nullo.

It should be known that, although these last two syllogisms can be proved through the *Dictum de omni* and the *Dictum de nullo*, as has been said, nevertheless the Philosopher, in Book I of the *Prior Analytics*,[3] reduces them to the first two moods in which the *Dictum de omni* and the *Dictum de nullo* are saved more truly on account of the universality of their minor propositions, and we shall do this for all in the end.

The second figure has four moods. The first consists of a universal negative major and a universal affirmative minor, from which a universal negative conclusion follows thus: "No b is a, every c is a, therefore no c is b." Now in this syllogism the *Dictum de nullo* cannot be shown, because under "b," to which the universal quantifier is joined, namely, "no," nothing is taken from which the subject can be removed and, therefore, in order that it might be proved through the *Dictum de nullo*, it is reduced to the second mood of the first figure. Now this can be done in two ways, either by simple conversion of the major, as it is said thus: "No a is b, every c is a, therefore no c is b," and it is also proved through the third principle mentioned above, which was, if the opposite of the antecedent is inferred from the opposite of the consequent, then the first consequence is valid. It should be known that every syllogism is a certain consequence in which both premisses are the antecedent, while the conclusion is the consequent. Whence, if from the opposite of the conclusion together with one of the premisses, the opposite of the other premiss is inferred in an ordering in which the Dictum de omni or Dictum de nullo is saved, then the first consequence or syllogism is valid. And it is thus in the proposed example. For the consequent or conclusion is, "No c is b," which has two opposites, namely, a contrary and a contradictory. Let its contrary, namely, "Every c is b," be taken. Now let the major of the aforesaid syllogism, namely, "No b is a," be taken, and let the contrary opposed to the conclusion be the minor, and let it be stated thus: "No b is a, every c is b, therefore no c is a." This syllogism is in the second mood of the first figure, and from the opposite of the consequent or conclusion this is inferred, "No c is a," which is the opposite of one of the premisses, namely, of the minor, because it is contrary to the minor of the first syllogism, which was "Every c is a." Therefore, from the opposite of the consequent together with one of the premisses, the opposite of the other premiss is inferred. Therefore, the first consequence or syllogism was valid.

The second mood consists of a universal affirmative major and a universal negative minor, from which a universal negative conclusion follows thus: "Every b is a, no c is a, therefore no c is b." This syllogism is reduced to the second mood of the first figure through the simple conversion of the minor and through the transposition of the premisses, namely, so that that which was the major is made the minor thus: "No a is c, every b is a, therefore no b is c." The major of this syllogism was that into which the minor of the first syllogism, which was "No c is a," was converted. But through the third principle or through a conversive syllogism it is reduced to the second mood of the first figure thus: let the contrary proposition of the conclusion, which is "Every c is b," be taken and made the minor thus: "Every b is a, every c is b, therefore every c is a." And this, which is concluded in that second syllogism, namely, "Every c is a," is contrary to this, "No c is a," which was the minor; therefore, from the opposite of the consequent, and so forth.

The third mood is when from a universal negative major and a particular affirmative minor, a particular negative is concluded thus: "No b is a, some c is a, therefore some c is not b." This is reduced to the fourth mood of the first figure through the simple conversion of the major, "No a is b, some c is a, therefore some c is not b." But it is reduced through a conversive syllogism to the second mood of the first figure. For the opposite of the conclusion, which is "Some c is not b," is this, "Every c is b," and let it be made the minor thus: "No b is a, every c is b, therefore no c is a," which is the opposite of the minor of the first syllogism, which was "Some c is a."

The fourth mood is when, from a universal affirmative major and a particular negative minor, a particular negative is concluded thus: "Every b is a, some c is not a, therefore some c is not a." This syllogism cannot be reduced through conversion of the premisses, for the major, which is a universal affirmative, can only be converted into a particular affirmative, and the minor is particular. Now, as has been said [97B-259*], nothing follows from many particulars. Therefore, it is reduced through a syllogism which is sometimes called "reduction to the impossible," just as three other syllogisms mentioned above have been reduced, and it is reduced to the first mood of the first figure. For the opposite of the conclusion, which was "Some c is not b," is this, "Every c is b," which is made the minor thus: "Every b is a, every c is b, therefore every c is a." And this is the opposite of the minor, which was "Some c is not a."

And thus it is evident about the syllogisms of the first and second figures.

CHAPTER VII

ABOUT THE SYLLOGISMS OF THE THIRD FIGURE AND ABOUT THE REDUCTION OF ALL THE SYLLOGISMS TO THE FIRST TWO MOODS OF THE FIRST FIGURE

Now the third figure has six moods. The first consists of a universal affirmative major and a universal affirmative minor, from which a particular affirmative conclusion follows thus: "Every b is a, every b is c, therefore some c is a." This syllogism is reduced through the accidental conversion of the minor to the third mood of the first figure thus: "Every b is a, some c is b, therefore some c is a." But it is reduced through a conversive syllogism to the second mood of the first figure. For let the opposite of the conclusion, which is, "No c is a," be taken and be made the major thus: "No c is a, every b is c, therefore no b is a." Now this is the contrary of the major of the first syllogism, which was "Every b is a."

It should be known that in reduction through a conversive syllogism there is this difference between syllogisms of the second and third figures, that in syllogisms of the second figure the minor proposition is made from the opposite of the conclusion and the opposite of the minor proposition is inferred, but in syllogisms of the third figure the major proposition is made from the opposite of the conclusion and the opposite of the major proposition is inferred.

The second mood consists of a universal negative major and a universal affirmative minor, from which a particular negative conclusion follows thus: "No b is a, every b is c, therefore some c is not a." This is reduced through the accidental conversion of the minor to the fourth mood of the first figure thus: "No b is a, some c is b, therefore some c is not a." But it is reduced through a conversive syllogism to the first mood of the first figure, if the opposite of the conclusion is accepted and made the major thus: "Every c is a, every b is c, therefore every b is a." This conclusion is the contrary of the major of the first syllogism.

The third mood consists of a particular affirmative major and a universal affirmative minor, from which a particular affirmative conclusion follows thus: "Some b is a, every b is c, therefore some c is a." This is reduced through conversion to the third mood of the first figure by converting the major simply and by transposing the propositions thus: "Every b is c, some a is b, therefore some a is c." But through a conversive syllogism it is reduced to the second mood of the first figure thus: "No c is a, every b is c, therefore no b is a." This conclusion is the contradictory of the major, which was "Some b is a."

The fourth mood consists of a universal affirmative major and a particular affirmative minor concluding to a particular affirmative thus: "Every b is a, some b is c, therefore some c is a." This is reduced through conversion of the minor to the third mood of the first figure thus: "Every b is a, some c is b, therefore some c is a." But through a conversive syllogism it is reduced to the fourth mood of the first figure thus: "No c is a, some b is c, therefore some b is not a." This conclusion is the contradictory of the major of the first syllogism, which was "Every b is a."

The fifth mood consists of a particular negative major and a universal affirmative minor concluding to a particular negative thus: "Some b is not a, every b is c, therefore some c is not a." This can not be reduced through conversion because its major cannot be converted since it is a particular negative, while its minor can only be converted into a particular. From particulars alone, however, nothing follows. But it is reduced through a conversive syllogism to the first mood of the first figure thus: "Every c is a, every b is c, therefore every b is a," and this is the contradictory of the major of the first syllogism, which was "Some b is not a."

The sixth mood consists of a universal negative major and a particular affirmative minor, concluding to a particular negative thus: "No b is a, some b is c, therefore some c is not a." This is reduced through conversion of the minor to the fourth mood of the first figure thus: "No b is a, some c is b, therefore some c is not a." But through a conversive syllogism it is reduced to the third mood of the first figure thus: "Every c is a, some b is c, therefore some b is a," which is the contradictory of the major of the first syllogism, which was "No b is a."

And thus it is evident about the syllogisms concluding directly in all the figures and about their proofs.

The Philosopher, however, reduced all syllogisms to the two universal moods of the first figure.[1] Whence he reduced the third mood of the first figure through a conversive syllogism to the second mood of the second figure, and he reduced the fourth mood of the same first figure through a conversive syllogism to the first mood of the second figure, and these are reduced to the two universal moods of the first figure, as has been said [98A-264*]. Therefore all the syllogisms are reduced to the two universal moods of the first figure in which the Dictum de omni and the Dictum de nullo are perfectly saved.

Now that the two moods of the first figure just mentioned are reduced to the universal moods of the second figure is evident thus, for example, for the third mood of the first figure: "Every b is a, some c is b, therefore some c is a." The opposite of the conclusion is "No c is a," let which be made the minor and let a syllogism be made in the second mood of the second figure thus: "Every b is a, no c is a, therefore no c is b," which is the opposite of the minor, which was "Some c is b." But the fourth [mood of the first figure] is reduced to the first [mood of the second figure]. For the fourth mood is thus: "No b is a, some c is b, therefore some c is not a." The opposite of the conclusion is "Every c is a," let which be made the minor and let a syllogism be made in the first mood of the second figure thus: "No b is a, every c is a, therefore no c is b."

Therefore it is evident how all the syllogisms may be reduced to the two universal moods of the first figure.

CHAPTER VIII

ABOUT SYLLOGISMS CONCLUDING INDIRECTLY AND ABOUT THEIR REDUCTION

Now it remains to speak about syllogisms concluding indirectly.[1] And to conclude indirectly is to have the minor extreme predicated of the major[2] in the conclusion. And there are ten such syllogisms, for there are five in the first figure, two in the second figure and three in the third figure. It should be known that every syllogism concluding to some conclusion which can be converted can also conclude to that into which it can be converted. Therefore, since all the conclusions of these syllogisms can be converted, excepting the particular negative ones, all such syllogisms can conclude indirectly. And there are three such [syllogisms] in the first figure, namely, the first, second and third moods. There are two in the second, namely, the first and second moods. There are three in the third figure, namely, the first, third and fourth moods. And two moods may be added in the first figure which are contrary to the two principles or rules given for the first figure, for both have a negative minor premiss, which is contrary to this rule: in the first figure, the minor being negative, nothing follows.

And one of them has a particular major premiss, which is contrary to the other rule. The modern doctors, however, namely, Boethius, omitting five of them, namely, those of the second and third figures, have made mention only of the five of the first figure.

The first of these consists of a universal affirmative major and a universal affirmative minor, concluding indirectly to a particular affirmative thus: "Every b is a, every c is b, therefore some a is c." And it is reduced to the first mood of the first figure, if the particular conclusion is converted into a universal.

The second consists of a universal negative major and a universal affirmative minor, concluding indirectly to a universal negative thus: "No b is a, every c is b, therefore no a is c." It is reduced to the second mood of the first figure by converting the conclusion simply.

The third mood consists of a universal affirmative major and a particular affirmative minor, concluding indirectly to a particular affirmative thus: "Every b is a, some c is b, therefore some a is c." It is reduced to the third mood of the first figure by converting the conclusion simply.

The fourth mood consists of a universal affirmative major and a universal negative minor, concluding indirectly to a particular negative thus: "Every b is a, no c is b, therefore some a is not c." And it is reduced to the fourth mood of the first figure by converting the major accidentally and the minor simply, and transposing the propositions, so that the major is made from the minor and the minor from the major thus: "No b is c, some a is b, therefore some a is not c."

The fifth mood consists of a particular affirmative major and a universal negative minor, concluding indirectly to a particular negative thus: "Some b is a, no c is b, therefore some a is not c." And it is reduced to the fourth mood of the first figure through the simple conversion of both propositions and transposing both thus: "No b is c, some a is b, therefore some a is not c." And thus it is evident about the syllogisms concluding indirectly.

Now it should be known that in order to retain in the memory the syllogisms mentioned above, some verses have been invented which are designated thus:

Barbara, celarent, darii, ferio, baralipton,
Celantes, dabitis, fapesmo, frisesomorum,
Caesare, camestres, festino, baroco, darapti,
Felapton, disamis, datisi, bocardo, ferison,

and they are understood thus: in these verses there are nineteen words which point out the nineteen moods of syllogisms according to their order, namely, the nine moods of the first figure, four concluding directly and five indirectly, and four of the second figure and six of the third figure. And all these words have three syllables, of which the first syllable represents the major proposition, the second the minor, and the third the conclusion. And if more syllables are found in any work, they are not necessary, but are placed there for the sake of the meter. And in the syllogisms mentioned above there are four vowels, namely, "a," "e," "i," and "o," which have this meaning, "a" signifies the universal affirmative, "e" the universal negative, "i" the particular affirmative, and "o" the particular negative. Whence Barbara, which represents the first mood of the first figure, has "a" in all of its syllables because all its propositions are universal affirmatives. All of the words mentioned above begin with these four consonants, "b," "c," "d," and "f." And the first four words, which represent the four moods of the first figure concluding directly, begin with these four consonants. Whence, if other words begin with any of these consonants whatever, they mean that such syllogisms are to be reduced to that mood of the first figure which the word beginning with that consonant represents. For example, Caesare [sic], which represents the first mood of the second figure, begins with the consonant "c" and this means that this mood is reduced by conversion of the major premiss to the second mood of the first figure which the word beginning with "c" represents, namely, celarent; and so also for the others. Also in the syllogisms mentioned above, sometimes the letter "s" is found after a vowel, and this means that that proposition or conclusion which the syllable represents ought to be converted simply. But sometimes a "p" is found and this signifies that that proposition or conclusion which the syllable represents ought to be converted accidentally. But sometimes an "m" is found and this means that the premisses of that syllogism ought to be transposed so that the minor is made from the major, and conversely. Sometimes a "c" is found and it means that this syllogism cannot be reduced through conversion, but only by a conversive syllogism, and this happens in only two syllogisms, namely, baroco and bocardo, as has been said.[3] It should be understood that the rules mentioned above, except the rule about the letter "c," are understood only for the reduction of the syllogisms made by conversion, and not about that which is made through a conversive syllogism.

And thus it is evident about the conversive assertoric syllogisms.

CHAPTER IX

ABOUT THE DISCOVERY OF THE MIDDLE TERM IN THE SYLLOGISMS OF ALL THE FIGURES, AFFIRMATIVE AS WELL AS NEGATIVE

The syllogisms having been understood, in order that we may syllogize and conclude to any conclusion more easily, it should be known that every conclusion contains in itself both extremes, as has been said [96B-252*], but the entire syllogism is made from three terms. Having any proposition whatsoever to be concluded, we lack one term for completing the syllogism, namely, the middle term. And we shall see how such a middle term may be found.

Note here that the Philosopher, in Book I of the Prior Analytics,[1] used three words for the terms, namely, antecedent, consequent, and repugnant. And that term which can be made the subject is called the antecedent, as "man" is antecedent to "animal." And that term is called the consequent which can be predicated about another, and thus "animal" is consequent to "man." And since terms convertible one with the other can both be the subject and be the predicate, as a property which can be predicated of a species and the species of it, and the definition and the defined are related similarly; therefore, one in respect of the other is called the antecedent and is called the consequent. But that term is called repugnant which cannot be the subject of another, nor be predicated of it, as "man" and "ass," of which neither can be predicated of the other, nor be subject to it.

It should be known that there are fourteen moods of syllogisms concluding directly, as has been said [100B-275*], namely, four in the first figure, four in the second and six in the third, since I am not introducing here the moods concluding indirectly. Therefore, in the first figure there are two affirmative moods concluding directly, namely, the first and the third, and two negative ones, namely, the second and the fourth. To find a middle term in the affirmative moods, one term should be considered which is antecedent to the predicate and consequent to the subject. For example, if this is to be argued, namely, "Every man is a substance," we already have the major and minor extremes. Now "animal" is consequent to the subject and antecedent to the predicate, and therefore it is the middle term through [which] this syllogism [is] in the first mood of the first figure, thus: "Every animal is a substance, every man is an animal, therefore every man is a substance." But if this is to be concluded, "Some man is a substance," "animal" is the middle term in the third mood of the same figure and a syllogism is made thus: "Every animal is a substance, some man is an animal, therefore some man is a substance." But in the negative syllogisms of the same figure a [word] repugnant to the predicate and consequent to the subject is taken for the middle. For example, if this is to be concluded, "No man is a stone" or "Some man is not a stone," let "animal" be taken for the middle. For "animal" is repugnant to "stone" and can be predicated of "man." Therefore, let a syllogism be made in the second mood of the first figure thus: "No animal is a stone, every man is an animal, therefore no man is a stone." But in the fourth mood it is thus: "No animal is a stone, some man is an animal, therefore some man is not a stone." And thus it is evident about the discovery of a middle term in the first figure.

In the second figure there are four moods, all negative, of which the first and the third have a negative major proposition, while the minor is affirmative. And conversely, the second and fourth moods have an affirmative major, while the minor is negative, and therefore the middle term is taken differently in each [group]. Whence, in the first and third moods [a word] is taken for the middle term [which is] repugnant to the predicate and consequent to the subject. For example, if this is to be concluded, "No man is a stone," or this, "Some man is not a stone," "animal" is taken for the middle term, and it is syllogized in the first mood of the second figure thus: "No stone is an animal, every man is an animal, therefore no man is a stone." In the third mood thus: "No stone is an animal, some man is an animal, therefore some man is not a stone." But in the second and fourth moods, [a word] is taken [which is] consequent to the predicate and repugnant to the subject. For example, if this is to be concluded, "No man is a stone," or this, "Some man is not a stone," "inanimate" is taken for the middle term, because it can be predicated of "stone" and is repugnant to "man," and it is syllogized in the second mood thus: "Every stone is inanimate, no man is inanimate, therefore no man is a stone." In the fourth mood thus: "Every stone is inanimate, some man is not inanimate, therefore some man is not a stone." And thus it is evident about the discovery of a middle term in the second figure.

But in the third figure there are six moods, all concluding particularly, of which three are affirmative and three negative. In the three affirmative moods, namely, the first, third and fourth, [a word] antecedent to both terms is taken for the middle. For example, if this is to be concluded in the first mood, namely, "Some animal is a substance," let "man" be taken for the middle term, of which "animal" and "substance" can be predicated, and let it ibe syllogized thus: "Every man is a substance, every man is an animal, therefore some animal is a substance." In the third mood thus: "Some man is a substance, every man is an animal, therefore some animal is a substance." In the fourth mood thus: "Every man is a substance, some man is an animal, therefore some animal is a substance."

But in the three negative moods, [a word] repugnant to the predicate and antecedent to the subject is taken for the middle term. For example, if this is to be concluded, "Some animal is not a stone," "man" is taken for the middle term because it is repugnant to "stone" and is predicated of animal, and it is also syllogized in the second mood thus: "No man is a stone, every man is an animal, therefore some animal is not a stone." But in the fifth mood thus: "Some man is not a stone, every man is an animal, therefore some animal is not a stone." But in the sixth thus: "No man is a stone, some man is an animal, therefore some animal is not a stone." And thus it is evident about the discovery of a middle term in the third figure.

It should be noted that to find the antecedent and consequent quickly, convertible terms can be the antecedent and consequent indifferently, because a definition, a description and an interpretation are terms convertible with the defined, the described and the interpreted. Take the term of which you wish to find the antecedent and consequent and define or describe or interpret it, and then use the rules mentioned above. For example, if you wish to conclude this, "Everything that is running is moving," in the first mood of the first figure, where you ought to take an antecedent to the predicate, you define or describe or interpret "moving," which is described thus, "'moving' is changing place in time." But "every thing that is running is changing place in time, therefore every thing that is running is moving." And thus it can be done with a definition or interpretation. And thus it is evident about the discovery of the middle term in ostensive assertoric syllogisms.

CHAPTER X

ABOUT THE DIFFERENCE BETWEEN THE OSTENSIVE SYLLOGISM AND THE SYLLOGISMS REDUCED TO THE IMPOSSIBLE

Having spoken about ostensive syllogisms and about the discovery of their middle terms, we must now speak about the syllogisms reduced to the impossible, for the syllogism reduced to the impossible differs from the ostensive syllogism. For the ostensive syllogism concludes to a true conclusion from two true premisses, but the syllogism reduced to the impossible does not do this, but it concludes to an evidently false conclusion from either premiss being false. Thence, from the contradiction of a false conclusion it concludes again to the contradiction of the false premiss.[1] For an example of both, given that the adversary should assert this false proposition, namely, "Every man is running," I argue against him through an ostensive syllogism thus, since I take two true premisses and I conclude to a contradiction of the aforesaid proposition thus: "No person who is resting is running, some man is resting, therefore some man is not running." This conclusion contradicts the proposition of the adversary, which was, "Every man is running," and because his is false, mine is true, and conversely. But if I wish to refute it through a syllogism reduced to the impossible, I take it together with another true proposition and I make them the premisses of some syllogism and I conclude to an evidently false conclusion, and I assume the contradiction of this false conclusion, and from it I conclude to the contradictory of the false premiss thus: "Every thing that is running is moving, every man is running, therefore every man is moving, but some man is not moving, therefore some man is not running." Now, from the falsity of this premiss I see the truth of my proposition, and from the truth of this I see the falsity of that. For the reason of the truth of this last conclusion of the syllogism reduced to the impossible is that in the syllogisms ordered in mood and figure the conclusion will never be false unless one of the premisses is false. Now first a false conclusion is concluded ostensively, namely, "Every thing that is running is moving" [*sic*]. Therefore, one of the premisses was false. It was not mine, namely, "Everything that is running is moving." Therefore, the proposition of the adversary, namely, "Every man is running," is false. Therefore, its contradictory, namely, "Some man is not running," which is the last conclusion of the syllogism reduced to the impossible from the ostensive syllogism, is true.

CHAPTER XI

ABOUT THE MOODS AND FIGURES IN WHICH SYLLOGISMS REDUCED TO THE IMPOSSIBLE CAN BE MADE

Now we must speak about the moods and figures in which syllogisms reduced to the impossible can be made. It should be known first here, as has been said,[1] that the conclusion of a syllogism reduced to the impossible is not that which is first concluded falsely through the ostensive syllogism, but that which is concluded last, namely, the contradictory of the false premiss of the adversary. Now it must always be the contradictory because, as has been said in another treatise above [90A-215*], the law of contradictories is such that if one is true, the remaining is false, and conversely. Whence, if the assumed premiss of the adversary is false, it always follows that if the conclusion of the syllogism reduced to the impossible is contradictory to it, it will be true. But if it were contrary to it, however false it may be, nevertheless it would not follow necessarily that the latter should be true, for two contraries can be false together, as has been said above [90A-214*]. Therefore, according to what has been said, since in the first figure there is no syllogism which has any of the premisses a particular negative, but [only] universal [negatives], a conclusion cannot be concluded through a reduction to the impossible.[2] But, since in the first mood of the first figure, both of the premisses are universal affirmative, of which the opposites are particular negative, therefore only a particular negative can be concluded in it if a false major is taken at first, namely, "Every man is a stone, every risible thing is a man, therefore every risible thing is a stone, but some risible thing is not a stone, therefore some man is not a stone." If a false minor is taken, the same thing follows thus: "Every risible thing is a man, every stone is risible, therefore every stone is a man, but some stone is not a man, therefore some stone is not risible." But in the second mood of the first figure a particular affirmative and a particular negative can be concluded thus: "No man is an animal, every risible thing is a man, therefore no risible thing is an animal, but some risible thing is an animal, therefore some man is an animal." The particular negative thus: "No man is a stone, every pearl is a man, therefore no pearl is a stone, but some pearl is a stone, therefore some pearl is not a man." But in the third mood of the first figure a particular negative and a universal negative are concluded through reduction to the impossible. The particular negative thus: "Every man is a stone, some risible thing is a man, therefore some risible thing is a stone, but no risible thing is a stone, therefore some man is not a stone." The universal negative thus: "Every man is an animal, some stone is a man, therefore some stone is an animal, but no stone is an animal, therefore no stone is a man." But in the fourth mood a particular affirmative is concluded thus: "No animal is a substance, some man is an animal, therefore some man is not a substance, but every man is a substance, therefore some animal is a substance." And the universal negative thus: "No animal is a stone, some pearl is an animal, therefore some pearl is not a stone, but every pearl is a stone, therefore no pearl is an animal." And thus it is evident about the syllogisms reduced to the impossible which can be made in the first figure.[3]

And they can be made in the same way in the other two figures, namely, as from the opposite of a false conclusion is inferred the opposite of a false premiss, namely, that opposite of the false premiss which is its contradictory. Whence, since in the first and second moods of the second figure, the premisses are universal affirmative and universal negative, of which the opposites are the particular negative and the particular affirmative, therefore, a particular affirmative and a particular negative can be concluded in them through the syllogism reduced to the impossible. A particular affirmative, if a false major is taken, but a particular negative if a false minor is taken. And it is done thus in all the other moods of the second as well as of the third figures.

It should be known that the universal affirmative cannot be concluded through the impossible, except in the fourth mood of the second figure and in the fifth mood of the third figure, namely, in those moods of which it has been said above [100B-277*] that they cannot be reduced to moods of the first figure through conversion of the propositions. And the reason is that only these two moods and no others have a particular premiss, and I am speaking about syllogisms concluding directly. Let us take an example of how the universal affirmative is concluded in both of them. In the fourth mood of the second figure thus: "Every man is an animal, some risible thing is not an animal, therefore some risible thing is not a man, but every risible thing is a man, therefore every risible thing is an animal." In the fifth mood of the third figure thus: "Some man is not an animal, every man is a risible thing, therefore some risible thing is not an animal, but every risible thing is an animal, therefore every man is an animal."

It should be noted that the Philosopher, in the second book of the Prior Analytics,[4] makes only one premiss false in each mood of every figure and concludes through the syllogism reduced to the impossible in each to only one conclusion, and nevertheless we say that in each mood both are false and we conclude through the impossible to the opposite of both.

It should be noted that in the first and second figures a false minor is taken more suitably, since what is subject in the opposite of the false conclusion afterwards is subject in the conclusion of the syllogism reduced to the impossible. For example, in the first figure thus: "Every man is an animal, every stone is a man, therefore every stone is an animal, but some stone is not an animal, therefore some stone is not a man." Now, "stone" is the subject in the opposite of the false conclusion and in the last conclusion, but if a false major is taken, it can be purified, as has been said, and as is commonly done. Therefore, it is evident what syllogisms reduced to the impossible are and in which moods and figures they are made.

CHAPTER XII

HOW SYLLOGISMS REDUCED TO THE IMPOSSIBLE ARE REDUCED TO OSTENSIVE SYLLOGISMS

And since all syllogisms reduced to the impossible are reduced to ostensive syllogisms, therefore it must be seen how it may be done.[1] It should be known that syllogisms which are reduced to the impossible in the first figure are ostensive in the second and third figures. For if the opposite of a false major proposition is concluded, an ostensive syllogism in the third figure is made thus, for example, in the first mood of the first figure, when the opposite of the major is concluded thus: "Every man is a stone, every risible thing is a man, therefore every risible thing is a stone, but some risible thing is not a stone, therefore some man is not a stone." Four enunciations preceded this conclusion, namely, "Some man is not a stone," of which two were false, namely, the major and the conclusion of the ostensive syllogism, while two were true, namely, the minor of the syllogism and the opposite of the conclusion. The aforesaid conclusion, namely, "Some man is not a stone," follows in the third figure from these two true propositions, so that the opposite of the conclusion is made the major and the minor of the ostensive syllogism remains the minor thus: "Some risible thing is not a stone, every risible thing is a man, therefore some man is not a stone," and this is the fifth mood of the third figure. But when the opposite of the minor is concluded through reduction to the impossible, an ostensive syllogism is made in the second figure. For example, let the syllogism reduced to the impossible be this: "Every man is an animal, every stone is a man, therefore every stone is an animal, but some stone is not an animal, therefore some stone is not a man." Let two false propositions, namely, the minor and the conclusion of the ostensive syllogism, be taken away and let a syllogism be made in the fourth mood of the second figure thus: "Every man is an animal, some stone is not an animal, therefore some stone is not a man." And it is done thus in the other moods of the first figure, as, namely, if in the syllogism reduced to the impossible the opposite of the major is concluded, it is reduced to the third figure, the opposite of the conclusion being the major and with the true minor. But if the opposite of the minor is concluded, such an ostensive syllogism is made in the second figure, so that the opposite of the conclusion is made the minor proposition and the true major remains the major [sic].[2]

But the syllogisms reduced to the impossible which are made in the second figure are ostensive in the first and third figures. For if the opposite of the major is concluded through reduction to the impossible, an ostensive syllogism in the third figure is made. For example, let this be the syllogism reduced to the impossible: "No man is an animal, every risible thing is a man [*sic*], therefore no risible thing is a man, but some risible thing is a man, therefore some man is an animal." Let the false propositions be taken away and let a syllogism be made in the fourth mood of the third figure thus: "Every risible thing is an animal, some risible thing is a man, therefore some man is an animal." It should be known that when a syllogism reduced to the impossible concludes to the opposite of the major in the first figure, it was reduced and became an ostensive syllogism in the third figure, and the opposite of the conclusion of the first ostensive syllogism became the major in the second syllogism and the minor of the same syllogism remained the minor in the second syllogism. But here it is not done thus, for the minor of the first syllogism becomes the major in the second syllogism. But if the opposite of the minor is concluded through reduction to the impossible, an ostensive syllogism is made in the first figure thus: "No man is a stone, every risible thing is a stone, therefore no risible thing is a man, but some risible thing is a man, therefore some risible thing is not a stone." Let all the false propositions be taken away and let a syllogism be made in the fourth mood of the first figure thus: "No man is a stone, some risible thing is a man, therefore some risible thing is not a stone." And in the same way the ostensive syllogisms of the other moods of the second figure [are made]. Whence, if the major is false, and the minor true, then the minor becomes the major and the opposite of the conclusion becomes the minor. But if the major is true and the minor false, then the major remains the major and the opposite of the conclusion becomes the minor.

But the syllogisms reduced to the impossible which are in the third figure are ostensive in the first and second figures. Whence, if the opposite of the major is concluded through reduction to the impossible, an ostensive syllogism is made in the first figure, namely, so that the opposite of the conclusion of the first syllogism is made the major proposition in the second syllogism; and what was the minor remains the minor thus: "Every man is a stone, every man is risible, therefore some risible thing is a stone, but no risible thing is a stone, therefore some man is not a stone." Now let an ostensive syllogism be made in the first figure thus: "No risible thing is a stone, every man is risible, therefore no man is a stone." And a true particular follows validly from a true universal. Whence, if this is true, "No man is a stone," which is the conclusion of this second syllogism, this also will be true, "Some man is not a stone," which was the conclusion of the syllogism reduced to the impossible. But if the opposite of the minor is concluded through reduction to the impossible, an ostensive syllogism is made in the second figure, so that the opposite of the conclusion of the first syllogism is made the major[3] in the second syllogism and the major of the first syllogism is made the minor thus: "Every man is an animal, every man is a stone, therefore some stone is an animal, but no stone is an animal, therefore some man is not a stone." Therefore, let an ostensive syllogism be made thus: "No stone is an animal, every man is an animal, therefore no man is a stone." From which it follows that "Some man is not a stone." And let it be done in the same way in the other moods of the third figure. And thus it is evident about syllogisms reduced to the impossible.

It should be known that the Philosopher in the book of the Prior Analytics discussed many other kinds of syllogisms, namely, irregular, conversive, opposites, and many others. But since only these two kinds of assertoric syllogisms are in use among the moderns, I have not introduced the others here. And therefore it is evident about the assertoric syllogisms.

CHAPTER XIII

ABOUT MODAL SYLLOGISMS AS TO PROPOSITIONS ABOUT THE NECESSARY

Now we must speak about modal syllogisms. It should be known here that since propositions about the necessary and the impossible, and those about the possible and the contingent are taken in the same way, as has been said above in the treatise on conversion [91B-224*], therefore modal syllogisms differ among themselves in two ways. First we will speak about the syllogisms about the necessary,[1] to which those about the impossible can be reduced; secondly, about contingent syllogisms, to which those about the possible taken contingently are reduced.

It should be known that some syllogisms about the necessary have both propositions necessary and then in whatever figure or mood they may be made, the conclusion is always necessary. For example, "It is necessary that every man be an animal, it is necessary that every risible thing be a man, therefore it is necessary that every risible thing be an animal," and so for the other cases, and so forth. It should be noted that "necessary" is taken in two ways, namely, necessary simply, as when something inheres in another simply and not with regard to some time or place or the like, as "It is necessary that man be an animal." The other is the necessary in a qualified sense [*secundum quid*], or with regard to a time, as we say that it is necessary that everything be what it is when it is; or according to a place, or according to a like thing. And the necessary [*apodictic*] proposition is not taken in this way. For, when Socrates is running, he necessarily is running, and nevertheless this proposition, "Socrates is running," is not necessary, but contingent.

But if apodictic syllogisms have one proposition necessary and the other assertoric, although they always conclude that the major extreme inheres in the minor, nevertheless, they do not always conclude from necessity, but sometimes so and sometimes not.[2]

Note here that in the first figure, the major proposition being necessary and the minor assertoric, a necessary conclusion always follows. But the major being assertoric, no matter how necessary the minor may be, nevertheless the conclusion will not be necessary, since terms are found where this is so and where it is not so. For example: "Every man is an animal, every risible thing is necessarily a man, therefore every risible thing necessarily is an animal." And these are the terms where it is so. But the terms where it is not so are these: "Every man is white, every risible thing is necessarily man, therefore every risible thing is necessarily white." Now this conclusion is not necessary simply. And it is so for the other moods of the first figure, affirmative as well as negative.

But in the second figure, in the first three negative moods, a proposition being necessary, whether it be the major or the minor, the conclusion will be necessary, being itself assertoric [sic]. But the affirmative being necessary and the negative being assertoric, a necessary conclusion does not follow. And this can be seen clearly by reducing the syllogisms mentioned above to moods of the first figure. For in the reduced syllogisms, the negative proposition will be the major. Now in the first figure, as has been said [104A-297*], if the major is necessary, then the conclusion is, but if not, then the conclusion is not. But in the fourth mood of the second figure, whatever the necessary proposition, either affirmative or negative, so long as the other is assertoric, a necessary conclusion does not always follow. For if the universal affirmative is not necessary, a syllogism is made in the same terms in which the second mood of the same figure is made with the universal affirmative being necessary. But, as has been said [104B-298*], if the affirmative is necessary, a necessary conclusion does not follow, which is evident through its reduction to the second mood of the first figure, and therefore it does not follow here. But if the particular negative is necessary, a necessary conclusion does not always follow, as is evident in these terms, namely, "Every white thing is a man, some ass necessarily is not a man," nevertheless it does not follow: "Therefore some ass necessarily is not white."

But in the third figure there are affirmative and negative syllogisms. And of the affirmative syllogisms some have both propositions universal while some have only one. A necessary conclusion follows in those syllogisms which have both propositions universal, either one of them being necessary, whether major or minor, which is evident through their reduction to the first figure. Now a necessary conclusion follows in those which have only one proposition universal, it being necessary, whether major or minor. But if the particular be necessary, a necessary conclusion does not follow, since, if it is reduced to the first figure, the major is assertoric, where, as has been said [104B-297*], a necessary conclusion does not follow. But of the negative syllogisms some have a universal negative proposition but some a particular negative one. Whence a necessary conclusion does not follow in those which have a universal negative proposition which is necessary. And a necessary conclusion does not follow in those which have a particular negative and a universal affirmative, each of them being necessary. For example, thus: "Some man is not awake, every man necessarily is an animal, therefore some animal necessarily is not awake." And this has an affirmative being necessarily. And the negative being necessary, thus: "Some white thing necessarily is not an animal, every white thing is awake," it does not follow: "Therefore some thing that is awake is necessarily not an animal," when "Every thing that is awake necessarily is an animal." And thus it is evident about apodictic modal syllogisms.

CHAPTER XIV

ABOUT CONTINGENT SYLLOGISMS

What follows is about contingent syllogisms. Note here that "contingent" has two meanings, namely, the contingent which inheres in the subject and the contingent which can inhere in the subject. And here that is called contingent which inheres in the subject when the predicate, although it is not of the essence of the subject or a property of it, nevertheless is a term which can be predicated or denied of the subject, although now it is actually predicated of it. And such a proposition, although it is about contingent matter, is called "contingent which inheres in the subject." And that is called "a contingent which can inhere in the subject when the predicate is contingent, as whiteness in respect to man, nevertheless it is not said to inhere in the subject in the proposition actually, but only possibly, as when I say, "It is contingent that man be white," the meaning is not that man is white, but that he can be white.[1]

It should be known that in the first figure, both of the propositions being contingent, the conclusion also will be contingent,[2] thus: "It is contingent that every white thing be musical, it is contingent that every man be white, therefore it is contingent that every man be musical." And it is thus for the other moods.

But in the second figure, if both propositions are contingent, whether they be affirmative or one of them be negative, whether they be universal or one of them be particular, the conclusion will never be contingent. For example: "It is contingent that no man be white, it is contingent that every risible thing be white, therefore it is contingent that no risible thing be a man." This does not follow because it is necessary that every risible thing be a man. And so it is for all the other moods.

But in the third figure, the premisses being contingent, whether they be affirmative or one of them be negative, whether universal or particular, a contingent conclusion always follows, as: "It is contingent that every man be white, it is contingent that every man be musical, therefore it is contingent that every musical thing be white." And so it is in the other moods.

But if one of the premisses be contingent and the other assertoric, a contingent conclusion does not always follow. Whence, in the first figure, the major being contingent, whether it be affirmative or negative, while the minor is simply assertoric, a contingent conclusion always follows, as: "It is contingent that every man be white, every risible thing is a man, therefore it is contingent that every risible thing be white." But, the major being assertoric and the minor contingent, a contingent conclusion does not always follow in order that the syllogism be perfect, thus: "Every healthy thing is an animal, it is contingent that every horse be healthy," but it does not follow that, "Therefore it is contingent that every horse be an animal."

It should be known that in any proposition in contingent matter the Dictum de omni can be saved in two ways, according to the two meanings mentioned above. Whence, when I say, "It is contingent that every man be white," I compare man to all those things about which it can be predicated either according to the very being of white, as if this were the meaning, "Everything which is man actually happens to be white," or according to its possible inherence, as if this were the meaning, "It happens that everything which is man can be white."

The assertoric proposition has only one Dictum de omni, namely, according to the comparison of the subject to its inferiors according to the actual inherence of the predicate and from this it follows that, in virtue of the Dictum de omni, the assertoric proposition can be taken under the contingent one. For there is one Dictum de omni under the two, since at least in one there is a consequence. But the contingent proposition cannot be taken under the assertoric one, for two Dicta de omni are not contained under one. And this is the reason why, the major being contingent while the minor is assertoric, a contingent conclusion does not follow syllogistically, although it may follow materially.

It should be known that the assertoric proposition can be taken in two ways, namely, the present assertoric, namely, when the predicate belongs to the subject only at present as, "Socrates is running," and the simple assertoric. Whence, in order that a contingent conclusion may follow, the minor being assertoric, it must be a simple assertoric proposition because the predicate always follows the subject; therefore it follows that whatever is contingent to the predicate is contingent to the subject. But since in the present assertoric proposition the predicate does not always follow the subject, it will not always be true that whatever is contingent to the predicate is contingent to the subject. And it is not the case that, if the minor were contingent, which has the same value as the present assertoric proposition, and the major were contingent, a conclusion follows. For if the minor is contingent, then the predicate always is contingent to the subject, for this: "It is contingent that a man is running," is always true because it is always contingent that a man run. Nevertheless this: "A man is not running," is not always true. Therefore, the two are different from each other.

And in the second figure, in the first three moods, the negative being contingent while the affirmative is assertoric, there is no syllogism. And the reason is that all syllogisms conclude only insofar as they are reduced to the first figure where the Dictum de omni and the Dictum de nullo are. Now such syllogisms cannot be reduced to the first figure. For the contingent universal negative is not converted as a predicate is made from the subject and a subject from the predicate, as has been said above [95B-246*], but it is converted in the terms. Whence this, "It is contingent that no man be white," is converted into this, "It is contingent that every man be white." Whence, according to this, the universal negative being contingent, namely, in three, that is, moods, a syllogism is not made because it cannot be proved through the Dictum de omni. But the affirmative being contingent and the negative assertoric, a syllogism is made because such a syllogism can be reduced to the first figure through the simple conversion of the negative proposition. Still there will not be a contingent conclusion, as has been said above [103A-302*]. In the fourth mood, however, a syllogism is not made in any way, whether the major or minor be contingent, for such a syllogism cannot be reduced to the first figure through conversion, but through a conversive syllogism; but either proposition being contingent and the other being assertoric, such a reduction cannot be made. Therefore nothing follows from it. And that such a reduction cannot be made with the major being contingent is clear. Let this be the syllogism: "It is contingent that every man be white, some stone is not white, therefore some stone is not a man," whose opposite is "Every stone is a man," therefore let a syllogism be made in the first figure thus: "It is contingent that every man be white, every stone is a man, therefore it is contingent that every stone be white." But this is not opposed to this, "Some stone is not white," which was the minor. For, as has been said [105A-303*], in a contingent proposition the Dictum de omni is saved according to a possible inherence, for in the future it may be true that every stone will be made white, and that now some stone may not be white and thus, in this way, the argument is not valid. And it also appears that such a syllogism is not valid. For the proposition being true, a false conclusion follows sometimes thus: "It is contingent that every man be white, some risible thing is not white," it follows: "It is contingent that some risible thing is not a man," which is simply false. Likewise, if the minor is contingent, nothing follows, and a syllogism is made thus: "Every man is an animal, it is contingent that some white thing is not an animal, therefore it is contingent that some white thing is not a man," for example, an egg which is white. It is contingent that sometimes it will be an animal and sometimes it will not be; if it follows this assertoric proposition, namely, "Some white thing is not a man," it does not hold. For its opposite is, "Every white thing is a man, therefore every white thing is an animal," which is not opposed to this, "It is contingent that some white thing not be an animal," as has been said above [105A-303*]. But if a contingent conclusion is drawn, namely, "It is contingent that some white thing not be an animal," of which the opposite is "It is necessary that every white thing be an animal," the same follows, and let a syllogism in the first figure be made thus: "Every man is an animal, it is necessary that every white thing be a man," it follows: "Therefore every white thing is an animal," as has been said above about the combinations of necessary and assertoric propositions [104A-297*], which is not opposed to this minor, namely, "It is contingent that some white thing not be an animal," and so it is a useless [invalid] argument.

But in the third figure, the major being contingent while the minor is assertoric, a contingent conclusion follows, for by converting the minor in five moods of syllogisms, a reduction is made to the first figure. For example, let a syllogism be made thus: "It is contingent that every man be white, every man is an animal, therefore it is contingent that some animal be white." By converting the minor accidentally, the third mood of the first figure is made thus: "It is contingent that every man be white, every animal is a man, therefore it is contingent that some animal be white;" and so it is for the other four moods.

The fifth mood of the third figure, however, is reduced to the first figure through a conversive syllogism thus: "It is contingent that some man not be white, every man is an animal, therefore it is contingent that some animal not be white," the opposite of which is "It is necessary that every animal be white;" then let the minor of the first syllogism be placed under it, namely, "Every man is an animal," and it follows: "Therefore it is necessary that every man be white," which is the contradictory of the major of the first syllogism.

And thus it is clear about the combination of contingent and assertoric propositions in the three figures, and so forth.

CHAPTER XV

ABOUT THE COMBINATION OF CONTINGENT AND NECESSARY PROPOSITIONS IN THE THREE FIGURES OF THE SYLLOGISM

What follows is about the combination of contingent and necessary propositions.[1] It should be noted that as to the affirmative moods of the first figure, the major being contingent while the minor is necessary, the syllogism will be complete and will conclude to a contingent conclusion. For example: "It is contingent that every man be white, it is necessary that every man be animal, therefore it is contingent that every man be white." But, if it should be the converse, namely, the major being necessary and the minor contingent, no syllogism is made. The reason is that the necessary proposition has one *Dictum de omni*, namely, according to the actual inherence of the predicate in the subject and in what is contained under it, but the contingent proposition has two *Dicta de omni*, as has been said above [105A-303*], therefore it cannot be taken under the necessary proposition by virtue of the principle which is the *Dictum de omni*. It should be known that in the syllogism mentioned above, although a conclusion is concluded through the *Dictum* *de omni*, nevertheless a contingent conclusion about the possible can be concluded, namely, that which is related to the contingent and the necessary in common, in virtue of this rule: If some subject be essentially under some predicate, whatever is contingent under the subject is contingent under the predicate. In the negative syllogisms, however, the affirmative proposition being necessary while the negative is contingent, a contingent conclusion follows thus: "It is contingent that no man be white, it is necessary that every risible thing be a man," therefore it follows: "It is contingent that no risible thing be white." But if the negative proposition is necessary, while the affirmative is contingent, two conclusions follow, namely, sometimes a contingent conclusion and sometimes an assertoric conclusion, which can be evident. For from the opposite of either conclusion together with one of the premisses, the opposite of the other premiss is inferred. And the reason that either conclusion should follow from one necessary negative proposition is that not only is the predicate said not to inhere in the subject, but also that it cannot inhere in it. Whence the syllogism signifies that the predicate does not inhere in the subject and cannot inhere in it. Whence, when something is contingently placed under a subject, it is signified that such a predicate is removed actually from that which is contingently placed under the subject, and so the conclusion will be contingent; because what is actually contingently removed makes a contingent enunciation and it is signified that in no way can it inhere, and thus not only does it not inhere contingently, but it inheres in no way in it, if the enunciation be assertoric.

And in the second figure in the first three moods, the negative being necessary while the affirmative is contingent, two conclusions also follow, namely, a contingent one and an assertoric one, since they are reduced to the first figure through the conversion of the necessary proposition. But in the fourth mood, the affirmative being contingent, while the negative is necessary, or conversely, the argument is useless.

But in the third figure, as to the affirmative syllogisms having universal propositions or either one universal, the major being contingent while the minor is necessary, a contingent conclusion follows. Therefore, by converting the minor, a syllogism is made in the first figure. If the major is necessary, however, while the minor is contingently possible, since contingently possible propositions are converted like necessary ones, the minor being converted, the first figure is made, as has been said, so that the major being necessary while the minor is contingent,[2] a contingently possible conclusion follows, although not through the Dictum de omni but through the first rule. As to the affirmative syllogisms having some particular premiss, if the major is universal, it follows the rules mentioned above. But if the major is particular, it follows the second rule. As to the negative syllogisms, I say that for the two moods having a universal negative major, the major being contingent while the minor is necessary, a contingent conclusion follows, and they are reduced to the first figure through conversion of the minor. If the major be necessary, however, while the minor is contingent, no syllogism is made, for it cannot be reduced to the first figure. But if the minor be contingently possible, since it can be converted like a necessary proposition, a syllogism would be made in the first figure, where two conclusions would be concluded, namely, an assertoric one and a contingent one, as has been said above [106B-310*]. And the negative syllogism whose major is a particular negative, that being contingent and the minor being necessary, a contingent conclusion follows, and it is reduced to the first figure through a conversive syllogism; but the major being necessary, no syllogism is made.

And thus it is clear about modal syllogisms.

CHAPTER XVI

ABOUT CONDITIONAL SYLLOGISMS WITH SIMPLE PROPOSITIONS

Having spoken about categorical syllogisms, now we must speak about hypothetical syllogisms.[1] And, as has been said above [92-229*], there are three species of hypothetical proposition, namely, the conditional, the copulative [conjunctive] and the disjunctive. Now the syllogisms which are made from copulative propositions are related in the same way as the syllogisms made from categorical propositions, and therefore we will pass over them here. But since syllogisms are made from conditional and disjunctive propositions differently from categorical propositions, therefore we must speak about them, and first about conditionals.

It should be noted that conditional propositions are either simple or composite. Now I call simple those which are composed from only two categorical propositions, as this, "If it is a man, then it is an animal." And composites are those which are composed from more [than two] propositions, as this, "If it is a man, since it is an animal, it is a substance." Now these composite conditionals can be made in three ways, because either the proposition will be comfrom two propositions, a conditional and a categorical, as this, "If it is a man, since it is an animal, then it is a substance;" or conversely, it will be composed of a categorical and a conditional thus, "If you are an animate being, then you are a man or you are an animal" [sic]; or it will be composed of two conditionals, as this, "If it is a man, then it is an animate being; if it is an animate being, then it is an animal." And since syllogisms which are made from simple propositions are known more easily than those which are made from composite propositions, therefore we shall place the simple syllogisms first and afterwards we shall briefly show, according to their similarity, how syllogisms are made from the composite propositions.

It should be known that there are four simple conditional propositions, for either they have both parts affirmed, namely, the antecedent and the consequent, as this, "If it is a man, then it is an animal;" or the antecedent affirmed and the consequent denied, as this, "If it is a man, then it is not a stone;" or the consequent affirmed and the antecedent denied, as this, "If the animal is not healthy, then it is ill;" or both denied, as this, "If it is not an animal, then it is not a man."

Now the syllogisms which are made from these propositions must be certain [kinds of] conquences. And, as the Philosopher says in Book II of the Topics,[2] there are two kinds of consequence, namely, that of positing, that is, when one proceeds from the positing of the antecedent [*modus ponens*], and contrariwise, namely, when one proceeds from the destruction of the consequent [*modus tollens*]. Therefore, according to these [considerations], two figures are made from the propositions mentioned above, in one of which one proceeds from the positing of the antecedent, while in the other [figure] one proceeds from the destruction of the consequent, each of which [figures] has four moods, according as there are four propositions, as has been said [107A-314*].

The first mood of the first figure is: "If it is a man, then it is an animal; but it is a man, therefore it is an animal." The second is: "If it is a man, then it is not a stone; but it is a man, therefore it is not a stone." The third is: "If the animal is not healthy, then it is ill; but the animal is not healthy, therefore it is ill." The fourth is: "If it is not an animal, then it is not a man; but it is not an animal, therefore it is not a man."

It should be known that syllogisms with the relative, "who," or with the pronoun, "whoever," are made in this way, for these pronouns make a consequence by positing the antecedent[3] thus: "Everybody who is running is moving; but Peter is running, therefore Peter is moving;" or "whoever," and so forth. From the destruction of the consequent thus: "Everybody who is running, or whoever is running, is moving; but Socrates is not moving, therefore Socrates is not running." And it happens thus in all the other moods of these figures.

Therefore, it is clear about conditional syllogisms with simple propositions.

CHAPTER XVII

ABOUT CONDITIONAL SYLLOGISMS WITH COMPOSITE HYPOTHETICAL PROPOSITIONS

What follows is about the composite conditionals, two of which are made from three categorical propositions, as has been said [106B-313*,314*], while the third is made from four. But three categorical propositions can be varied with respect to affirmation and negation in eight ways. First, they can be all affirmative; second, all negative; third, the first two affirmative and the third negative; fourth, the first two can be negative and the third affirmative; fifth, the first affirmative and the last two negative; sixth, the first negative and the last two affirmative; seventh, the first and last affirmative and the middle negative; eighth, the first and last negative and the middle affirmative. Therefore a variation can be made in each of these and so there are eight. But the third conditional, composed of two conditionals [and] which has four categorical propositions, can be varied in many more ways. I have spoken at length about all these composite propositions and about their variety and about the syllogisms which are made from them in the book which I wrote on the hypothetical syllogism.[1]

Therefore I will pass over treating them at length now, but let us see only the ways of syllogizing in any one of them.

Now two figures are made according to each of these propositions, in one of which one proceeds from the positing of the antecedent, in the other, from the destruction of the consequent. For the first proposition, as has been said [106A-313*,314*], is composed of a conditional and a categorical thus: "If it is a man, since it is an animate being, it is an animal; but it is a man, therefore since it is an animate being, it is an animal." And likewise, such a syllogism is made if some one, or all, of its parts is negative: "If it is a man, then since it is not inanimate, it is sentient; but it is a man, therefore since it is not inanimate, it is sentient." But from the destruction of the consequent thus: "If it is a man, then since it is an animate being, it is sentient; but it is not sentient, therefore it is not a man." In the negative thus: "If it is a man, since it is not inanimate, it is sentient; but since it is inanimate, it is not sentient, therefore it is not a man."[2]

But the second proposition, as has been said [106B-313*,314*], is composed of a categorical proposition and a conditional proposition thus: "If since it is an animate being, it is an animal, then it is a man." And syllogisms are made from the three propositions by the positing of the antecedent thus: "If since it is an animate being, it is a man, then it is an animal; but since it is an animate being, it is a man, therefore it is an animal." But, by negating some part thus: "If since it is an animate being, it is a man, then it is not a horse." But from the destruction of the consequent thus: "If since it is an animate being, it is a man, then it is an animal; but it is not an animal, therefore since it is an animate being, it is not a man." And with a negative part thus: "If since it is an animate being, it is a man, then it is not a horse; but it is a horse, therefore since it is an animate being, it is not a man." And since, as has been said [107A-317*], each of those propositions has to be varied in eight ways, sixteen syllogisms can be made from each, namely, eight from the positing of the antecedent and eight from the destruction of the consequent.

But the third proposition, as has been said [107A-317*], is composed from two conditionals thus, "If it is a man, then it is an animal; if it is an animal, then it is a substance." Now this proposition can be varied in three ways, according to the three variations of terms. For there is one term taken twice in it, but since they are two conditionals, such a term is sometimes the antecedent in both thus, "If it is a man, then it is an animal; if it is not a man, then it is not sentient." Sometimes it is the consequent in both thus, "If it is a man, then it is an animal; if it is a stone, then it is not an animal." Sometimes it is the consequent in one and the antecedent in the other thus, "If it is a man, then it is an animal; if it is an animal, then it is a substance." And according to this, syllogisms which are made from propositions of this kind are varied in three ways, and nevertheless each of these propositions can be multiplied into eight according to the affirmations and negations of its parts, from which sixteen moods of syllogisms are made.

But when the same term is the consequent in one and the antecedent in the other, the syllogisms are made thus: "If it is a man, then it is an animal; if it is an animal, then it is a substance; but it is a man, therefore it is a substance." And those of this kind are made from the positing of the antecedent. From the destruction of the consequent thus: "If it is a man, then it is an animal; if it is an animal, then it is a substance; but it is not a substance, therefore it is not a man." And this is called by Boethius the first figure of these propositions. According to him the second figure is made when the same term is the antecedent in both conditionals, from which a syllogism is made from the positing of the antecedent thus: "If it is a man, then it is an animal; if it is not a man, then it is insentient; but it is a man, therefore it is not insentient." Or thus: "If it is a man, then it is an animal; if it is not a man, then it is not rational; but it is a man, therefore it is rational."[3] From the destruction of the consequent thus: "If it is a man, then it is an animal; if it is not man, then it is insentient; but it is not an animal, therefore it is insentient." Or thus, "If it is a man, then it is an animal; if it is not rational, then it is not a man [sic]; but it is not an animal, therefore it is not rational." For man is destroyed when animal is destroyed, and when that is destroyed rational is destroyed.

According to him, the third figure is when it is not argued from the destruction of the consequent, but only from the positing of the antecedent thus: "If it is a man, then it is an animal; if it is a stone, then it is not an animal; but it is a man, therefore it is not a stone."

And thus it is evident about conditional syllogisms.

CHAPTER XVIII

ABOUT DISJUNCTIVE SYLLOGISMS AND ABOUT REDUPLICATIVE PROPOSITIONS AND ABOUT CONVERSION THROUGH COMPARISON

Now we must speak about disjunctive syllogisms. Note here that as one conditional proposition is multiplied according to the affirmation and negation of its parts and thus there are four, so also the disjunctive proposition is related thus, because either both parts are affirmative, as, "Either it is healthy or it is sick," or both parts are negative, as, "Either it is not healthy or it is not sick;" or the first is affirmative and the second negative, as, "Either it is healthy or it is not sick;" or the first is negative and the second affirmative, as, "Either it is not healthy or it is sick." Now in order to make syllogisms from the propositions mentioned above, it is first necessary to see which of these propositions is equivalent to a simple conditional; afterwards how a syllogism is made from that simple conditional, as has been said above [107A-314*,315*], so let it be made from that disjunctive proposition.

And in order to see this, it is necessary to suppose that in order for the disjunctive proposition to be true, it is always necessary that one of its parts be false so that, for example, the first part be false and the second be true. And since any proposition whatever having been assumed as false, if it is verified, it must be verified through its opposite. For example, if this is false, "It is not man," it is verified through this, "It is man," and conversely. Therefore, let us see whether the first part in a disjunctive proposition be affirmative or negative.

If the first part is affirmative, it is equivalent to a negated antecedent of a conditional. For as the antecedent of the conditional is assumed to this end that it be true in order for the whole conditional to be true, thus, the first categorical proposition, which we call the antecedent in a disjunctive proposition, must always be false. But to the end that the two antecedents be equivalent, it is necessary that if one is affirmed, the other is negated, since in both, namely, the disjunctive and the conditional, the consequent is true. Therefore, in order that they be equivalent to each other, it is necessary that if the one be affirmed, the other [must be], and if the one be negated, the other [must be]. For example, let the disjunctive be this, "Either he is healthy or he is sick," which has an affirmative antecedent and an affirmative consequent. In order that it may be equivalent to a true conditional, the conditional must have a negative antecedent and an affirmative consequent thus, "If it is not healthy, then it is sick."

And so on for the others.

These things having been established, the disjunctive syllogisms can be easily known. For, as has been said above [107A-313*,314*], four conditional syllogisms are made from the positing of the antecedent and four from the destruction of the consequent. It is done in the same way in these propositions. For the first conditional proposition, from which the first mood was taken, was this, "If it is a man, then it is an animal." Therefore, according to what has been said, that is equivalent to this, "Either it is not a man or it is an animal." Therefore, let the disjunctive syllogism be made thus: "Either it is not a man or it is an animal; but it is a man, therefore it is an animal." The second proposition of the second mood was this, "If it is a man, then it is not a stone," to which this is equivalent, "Either it is not a man or it is not a stone." Let the disjunctive syllogism be made thus: "Either it is not a man or it is not a stone; but it is a man, therefore it is not a stone." The third proposition was this, "If the animal is not healthy, then it is sick," to which this is equivalent, "Either it is healthy or it is sick." And let the disjunctive syllogism be made thus: "Either it is healthy or it is sick; but it is not healthy, therefore it is sick." The fourth proposition was this, "If it is not an animal, then it is not a man," to which this is equivalent, "Either it is an animal or it is [not] a man." And let the disjunctive syllogism be made thus: "Either it is an animal or it is [not] a man; but it is not an animal, therefore it is not a man."[1]

But in the second figure one proceeds from the destruction of the consequent and the first syllogism is made thus: "Either it is not a man or it is not [sic] an animal; but it is not an animal, therefore it is not a man." The second thus: "Either it is not a man or it is not a stone; but it is a stone, therefore it is not a man." And the third, thus: "Either it is healthy or it is sick; but it is not sick, therefore it is healthy." The fourth thus: "Either it is an animal or it is not a man; but it is a man, therefore it is an animal." And thus it is clear about the disjunctive syllogisms.

Therefore this ends the discussion of syllogisms. And I will not speak about the other kinds of argumentation.

It should be noted that, for the reduplicative proposition to be true, it is required that the four propositions setting forth the same, namely, the three categoricals and the one hypothetical, be true, and if any one of them be false, it would be false. And since these propositions are made sometimes in virtue of concomitance, as if it were said, "Man insofar as he is corporeal has color;" sometimes in virtue of a cause, as, "Fire insofar as it is warm is a heating agent," and therefore the reduplicative proposition in virtue of cause requires for its truth not only that its four exponent propositions be true, but also that that upon which the reduplication falls should express the cause of what is conveyed through the predicate, or that it be that to which the principal predicate belongs primarily. For an example about both of these propositions, for in order that this be true, "Man insofar as he is corporeal has color," it is required that these be true, namely, "Man has color," "Man is corporeal" and "Every corporeal thing has color" and "If anything is corporeal, it has color." Similarly for the truth of this, "Fire insofar as it is warm is a heating agent," it is true that, "Fire is a heating agent" and "Fire is warm" and "Every warm thing is a heating agent" and "If anything is warm, it is a heating agent" and "Heat is the cause of heating."

And a reduplicative proposition is converted thus, "Fire insofar as it is warm is a heating agent" converts to "Anything which insofar as it is warm is a heating agent is fire," and not thus, "A heating agent insofar as it is warm is fire."

It should be noted that a universal affirmative proposition is converted simply by changing the definite terms into indefinite terms, and it is also similar for the particular negative. The reason is that the universal affirmative proposition in definite terms is not converted simply, because terms may be found in which it is true, as, "Every man is risible" and "Every risible thing is man," [and] terms are also found in which it is not true, as, "Every man is an animal" [and] it does not follow that therefore, "Every animal is a man," since "animal" is related to more than "man." But since, if that term which is in more things than another term is made indefinite, it is then in less things than that which was in less. For "non-animal" is predicated of fewer things than "non-man," since "non-animal" is predicated of all beings except animals, while "non-man" is predicated of all beings and of animals except man, and therefore the conversion can be made.

But a conversion cannot be made in the particular negative in definite terms, since terms are found in which it is not valid, namely, when some species is predicated negatively of its genus, as, "Some animal is not man," but not conversely. But if the terms are made indefinite, namely, "non-man," "non-animal," "non-animal" is in more than "non-man." Therefore a conversion can be made, namely, "Some non-animal is not non-man." And thus it is evident about syllogisms, and so forth.

TREATISE V[1]

ON THE DEMONSTRATIVE SYLLOGISM

CHAPTER I

WHAT THE DEMONSTRATIVE SYLLOGISM IS

Now it remains to speak about demonstration. For since knowledge is the habit of the demonstrated conclusion acquired by speculation itself, in order to know what knowledge is and how it is acquired, it is necessary to know what demonstration is.[1] Now a demonstration is a syllogism proceeding [from premisses which are] true, necessary, first in themselves, proper, self-evident, immediate, and the causes of the conclusion.[2] It should be known that some demonstrations are *propter quid* and some are *quia*,[3] whence the said definition pertains only to demonstration *propter quid*. Now in this definition there are some things which pertain to the form of demonstration, in that it is said to be a syllogism; and there are some which pertain to the matter of demonstration, namely, that it proceeds from [premisses which are] true, necessary, and so forth.[4] Whence, first I shall discuss the particulars pertaining to the matter about which there is a demonstration. Secondly, I shall take up those things which pertain to its form, namely, in what figure or mood such a syllogism ought to be made.

For that demonstration should proceed from [premisses which are] true, necessary, and so forth, can be evident from its end, which is knowledge. For since knowledge is nothing other than understanding the cause of any thing, and not only the cause as it is the cause, but as it is actually the cause of this thing. For to know the cause of anything and not to know that its effect is in act is to know the effect virtually.[5] Now this is not to know the effect simply, but to know it only in a qualified way [secundum quid]. Also since knowledge is to know with certitude, it is necessary that the effect mentioned above always follow necessarily from the same cause. Therefore, the conclusion of a demonstration, whose habit is knowledge, or to know habitually, must proceed from such premisses which are the true and necessary causes of the conclusion.[6]

CHAPTER II

WHAT THE DICTUM DE OMNI IS PRIMARILY OR UNIVERSALLY

Now for investigating the said particulars of the definition of demonstration pertaining to the matter about which a demonstration is, certain necessary things must be set out in advance. For since the premisses of a demonstration are universal, therefore it is necessary to know what the *Dictum de omni* is, and since in them the predicate is said of the subject essentially [*per se*], therefore it is necessary to know what [we mean by] "essentially" and by "primarily."

ψNow the *Dictum de omni*, as it is taken here, is when nothing is taken under the subject about which the predicate is not said, nor is any time taken in which the predicate does not belong to that subject. Now there is this difference between this *Dictum de omni* and that which was spoken about in the treatise on the syllogism, for there the *Dictum de omni* was taken as whenever something is predicated universally of some subject, whether the predicate belongs to the subject necessarily and for all time or contingently and for the present. Whence, in this proposition, "Every man runs," the *Dictum de omni* is preserved in this way. But now the *Dictum de omni* is taken about that which always inheres in a subject, as, "Every man is an animal," for there is given no time in which man is not an animal. Therefore it is evident about the *Dictum de omni*.ψ[1]

ψNow "essentially" [*per se*] is said in four ways.[2] In the first way, when the predicate is the definition or some part of the definition of the subject itself, as, "Every man is a rational mortal animal," or "Every man is an animal." In the second way, "essentially" is said when the predicate is a proper passion of the subject itself in whose definition the subject is placed, as, "Every man is risible." For in the definition of "risible," "man" is not taken as its essential part, but as something beyond its essence, without which it could not be known. For since the being of an accident depends on a subject, it is necessary that the definition which signifies its very being should contain the subject in itself. In the third way, something is said to be "essentially" which signifies some solitary thing, as a singular which is in the genus of substance, as Socrates and Plato. In this way "white" or "walking" are not predicated essentially, since something solitary existing by itself is not understood [by them]. For by saying "white," I speak about an accident and a subject, but when I say "Socrates," I speak about something solitary, and "essentially" is said thus. And it should be known that this mode is not a mode of predicating "essentially," but a mode of being. Something is predicated "essentially" in the fourth way when something is said of another which is its immediate and necessary cause, as when we say that the slain one perished by slaying, for the slaying was the immediate and necessary cause of the perishing itself. And thus it is evident about "essentially."ψ3

Now something is said to be predicated "primarily" [_primo_] when the predicate and subject so agree that the predicate cannot be found outside of the subject, nor the subject outside of the predicate, as when we say, "Man is risible." For risibility is so related to man that about whatever "risible" is said, "man" is also said, and conversely. Whence, by saying, "Socrates is risible," although "risible" is now predicated of Socrates in the second way of speaking essentially, nevertheless, it is not predicated "primarily," since "risible" is predicated of many more things than "Socrates." ψNevertheless, the Philosopher calls "universal" what has been said to be predicated "primarily," and not universal which has been discussed in the first treatise, but because the predicate can be predicated universally of the subject and the subject of the predicate.

From these [considerations] it is clear how these three are related, namely, the _Dictum de omni_, "essentially" and "universal." For everything which is predicated primarily or universally is predicated essentially, although not conversely. For "risible" is predicated primarily and essentially of "man," but although "risible" is predicated [per se] essentially of "Socrates," nevertheless, it is not predicated primarily. Likewise also, what is predicated essentially is said of everything, although not everything which is said of everything is said essentially; for by saying, "Every animal is a man," the predication is about everything, but not essentially.ψ4

CHAPTER III

THAT DEMONSTRATION PROCEEDS FROM TRUE AND NECESSARY [PREMISSES][1]

These things having been seen, let us now see the parts of the definition of demonstration given above. For it is said there that demonstration proceeds from true premisses. Now what the true is has been said above.[2] Now in order that the conclusion be true from the premisses as from its causes, it is necessary that the premisses be true. For although something true can be concluded from false premisses, nevertheless, the truth of the conclusion is not from the premisses. For we say, "Every man is a stone, every pearl is a man, therefore every pearl is a stone." Now the conclusion is true, although the premisses are false. And since every cause assimilates its effect to itself, the falsity of these propositions cannot be the cause of the truth of the conclusion.[3] And therefore, in Book I of the _Prior Analytics_,[4] the Philosopher says that something true is concluded from false premisses, not _propter quid_, but _quia_. Therefore it is evident that demonstration proceeds from true premisses.

Then it is said that demonstration proceeds from necessary premisses. And what a necessary proposition is has been said in the treatise on the syllogism. It should be noted that a demonstrated conclusion must be necessary, for if knowledge implies certitude, which cannot be from the contingent insofar as it is contingent, but only from necessary things, the conclusion, whose habit is knowledge, must be necessary. This having been conceded, it should be known that although a necessary conclusion can be concluded from contingent premisses, or at least from one as has been said above,[5] nevertheless, it cannot be known by contingent premisses, but only by necessary ones. For if to know, as has been said above [109A-330*], is to grasp the necessary cause of a thing, then if the middle term is contingently related to the extremes, it will not be necessary to them, and consequently it can be removed, the conclusion remaining, and therefore it will not be the cause of the conclusion. Therefore, in order that it be the cause of the conclusion, it must be related necessarily to both extremes, and thus both premisses will be necessary.[6] And therefore, it is clear that demonstration proceeds from necessary premisses.[7]

CHAPTER IV

THAT DEMONSTRATION PROCEEDS FROM PREMISSES IN WHICH [PREDICATION] IS ESSENTIAL AND NOT ACCIDENTAL

Next it is said that demonstration proceeds from those things which are essential, and not from the accidental.[1] It should be known that in the principal affirmative demonstration, the middle term is the definition of the subject taken together with the definition of a passion. Whence in the major proposition, the passion is predicated of the definition of the subject in which the principles of the passion itself are expressed. For, as has been said in the first treatise [58B,59A-28* to 30*], the subject is compared to the first passion, not only by reason of the material cause, but also by reason of the efficient cause. Therefore, the definition of the subject taken together with the definition of the passion expresses the immediate and necessary efficient cause of that passion. Now this is the fourth mood of speaking essentially, as has been said [109A-333*]. Now in the minor proposition, the definition is predicated of the subject, and this is the first mood of speaking essentially. But in the conclusion, the proper passion is predicated of its own subject, and this is in the second mood of speaking essentially. For example, if we wish to demonstrate that every multiple of four is even, it is done thus: "Every multitude measured by one whose middle [mean] is not essential is even; but every multiple of four is such a multitude, therefore every multiple of four is even." Here the subject is "multiple of four," while its passion is "even" or "evenness," while the middle term which was taken states the definition of number, which is a multitude measured by one, and it states the definition of even, since even by itself is not the middle term. In the minor [*sic*] proposition, the passion is predicated of the definition of the subject, in which its own definition is expressed, and thus it is the fourth way of speaking essentially. In the minor proposition, the definition of the subject is predicated of the subject, and thus it is the first way of speaking essentially. But in the conclusion, the proper passion is predicated of its own subject, and this is the second way of speaking essentially. It is clear, therefore, that demonstration proceeds from those things which are essential. The common reason for this is established thus: a syllogism which proceeds from necessary premisses does not proceed from those which are accidental, but from those which are essential. But as has been said [109A-329*], demonstration proceeds from necessary premisses. Therefore, demonstration proceeds from those which are essential.[2]

CHAPTER V

THAT DEMONSTRATION PROCEEDS FROM PRIMARY AND IMMEDIATE PREMISSES

Next it is said that demonstration proceeds from primary premisses.[1] Note here that in the principal demonstration a proper passion is predicated of the subject in the conclusion. However, in the premisses, either definition is predicated of the subject or a proper passion is predicated of the definition of the subject and of its own definition. Now all these are convertible, and this is to be predicated "primarily" as has been said above [109B-333*]. And for this reason the demonstration placed above is not a principal demonstration, for "evenness" is concluded of every multiple of four, because "evenness" is related to more than every multiple of four, for it is said of every sixth number, of every eighth number, and so forth. And it happens that "even" is equal to some common number which has not been named and if it had a name, "even" would be predicated of it essentially and primarily, and a principal demonstration could be made of it, as we say that to have three angles equal to two right angles applies to the triangle essentially and primarily, since they are converted. For every triangle has three angles and everything having three angles is a triangle. However, it does not apply primarily to the isosceles triangle, since not everything having three angles is isosceles.

These propositions of demonstrations are immediate. For the mediate proposition is that in which the predicate belongs to the subject on account of some predicate which applies to the subject through something prior [per prius], as "risible" to "Socrates," since it first belongs to "man." Now the immediate proposition is that in which the predicate does not apply to the subject on account of something else, as "risible" agrees with the definition of man, and every proper passion with the definition of its subject and with its own definition. Therefore, it is evident that demonstration proceeds from primary and immediate principles.

It should be known that "primary" and "immediate" are different. For not everything which belongs primarily is called immediate. For "risible" belongs primarily to "man," but not immediately, since it belongs first [per prius] to the definition of man and to its own definition, otherwise the definition would not be the middle term for concluding "risible" of "man." Likewise also, not everything which inheres immediately, inheres primarily. For "man" inheres immediately in "Socrates," but not primarily, since "man" is said of many more things than "Socrates." Whence it is necessary that the premisses of demonstration be both [immediate and primary].

It should be known that when the first principles in a demonstration are sometimes mediate, since they can be demonstrated through some middle term, nevertheless, the demonstrator accepts them as immediate and as indemonstrable, for they are not things to be demonstrated in that science about which the demonstration is, but in a superior science.[2] And therefore, although they have a middle, nevertheless, they are accepted as immediate.[3]

CHAPTER VI

THAT DEMONSTRATION PROCEEDS FROM PROPERTIES, AND NOT FROM EXTRANEOUS OR COMMON THINGS

Next it is said that demonstration proceeds from properties.[1] Note here that sometimes a property is said to be something which is not extraneous and sometimes a property is said to be what is not common. And in both senses demonstration proceeds from what is proper, since it does not proceed from extraneous or common things. And that it may not proceed from extraneous things should be known because in a demonstration there are three terms, as in any syllogism, namely, the major extreme which is a proper passion, the minor extreme which is the subject, and the middle term which is the definition of the subject with the definition of the passion. Now if the middle term be extraneous to the major or minor extreme, namely, because it were not a definition comprehending both of them, then the major extreme would not be predicated of it essentially, nor would it be predicated of the subject essentially. But it has been proved that in the major proposition the major extreme is predicated essentially of the middle term in the fourth way of speaking essentially, and in the minor proposition the middle term is predicated of the minor extreme essentially in the first way of speaking essentially. Therefore, in no way does demonstration proceed from extraneous things, but from properties.

It should be known that, although in demonstrations there may not be a descent from one genus to another extraneous genus, nevertheless, nothing prohibits the subject of one demonstration from being contained sometimes under the subject of another demonstration and contracting it. For example, given that this passion, namely, "sentiency," should be demonstrated of "animal" through the definition of "animal;" if that same passion were to be demonstrated of "man" through the same middle term, or through a middle term contracted to the definition of man, then one demonstration would be made under another demonstration and the subject of the one would be under the subject of the other. It should be known that such a contraction is sometimes in the genus simply, as is said of "animal" and of "man," because it is restricted to man through some extraneous [_sic_] difference, while sometimes such a contraction or descent is made in the same genus in a limited respect [_secundum_ _quid_], since the subject is restricted by an extraneous difference, as the visual is extraneous to the genus of line and sound is extraneous to the genus of number, whence the line which is simply the subject of geometry and the visual line which is the subject of perspective are not simply of one genus, but only in

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a limited respect; and the number which is the subject of arithmetic and the sonorous number which is the subject of music are related likewise. And therefore, when those things which are of line simply are applied to the visual line, a descent is made somehow into another genus. Whence in a demonstration which is made in the science of perspective and in one made in the science of music, one proceeds somehow from extraneous principles. Therefore it is evident how demonstration proceeds from proper principles or premisses, and not from extraneous ones.

That it also proceeds from properties, and not from common attributes, it should be known that in demonstration some principles concur actually while some concur virtually. Now some principles are called "noble" or common conceptions of the mind since our intellect is naturally inclined through its own light to understand them so that, the terms being understood, it immediately understands these principles, as, "Every whole is greater than its part." For as soon as reason understands what a whole is and what a part is, it understands that this is true, namely, that every whole is greater than its part. These principles or first propositions, however, are more and less common. Whence this common principle, "Every thing is said to be or not to be," is common to every being, but this principle, "Every whole is greater than its part," applies only to corporeal being, and not to separated substances which have neither whole nor part, and many others are related thus. Whence, the said principles do not enter demonstrations which are made in sciences actually, but virtually. When I state any proposition whatsoever, a first principle enters into it virtually. For when I say, "Peter is running," it is certain that either he is a man or he is not, therefore this principle, namely, "Every thing is said to be or not to be," is virtually in each of the premisses of the demonstration, and thus it is for the other principles less common in respect to the demonstrations in which they are virtually. Whence, to say that demonstrations do not proceed from these principles virtually is false. But I say that such common principles do not actually enter the demonstration. φWhence, he who wishes to demonstrate that the circle can be squared by means of common principles, by arguing thus: "Where greater and less are found, there equal is found; but a square greater than a circle and one less than a circle are found, therefore an equal one is found," has demonstrated badly. The reason is that, as has been proved above [110B,111A-340*,341*], demonstration proceeds from primary and immediate principles, but both propositions of the demonstration will not be immediate and primary by using these principles, since "to be greater or less than a circle" does not belong only to the square, but also to the triangle and to many other figures. Therefore, in this proposition it is not primary or what belongs primarily. Nor is it immediate, since this can be proved through many middle terms. Therefore, demonstration does not proceed from such principles.[φ2]

In truth, there are some principles of demonstration which actually enter the demonstration and which are also called positions, suppositions and definitions. Now to understand these terms, note here that whatever is placed before the conclusion in a demonstration is called a position [*positio*], because it has been placed [*positus*] before the conclusion. Now some of the positions do not assume being or non-being, and the definition is such. For this is not called a definition, "Man is a rational mortal animal," but the definition is only this, namely, "mortal rational animal," without this fact that there is added to it being or non-being; and such a definition is a position. Sometimes a position is assumed to be or not to be, as when we say, "Man is a rational mortal animal," and this is called a supposition. It should be known that these suppositions are not called suppositions without reason. Note here that a proposition is called self-evident [*per se notis*] in which the predicate is about the nature of the subject. Now such [propositions] ought to be the premisses of demonstrations, as will be said below.[3]

It should be known that the terms of some propositions are characteristics [*notitia*] of all things in common, and they are being [*ens*], true, good, one, something and thing, and like terms which pertain to the first conceptions of the intellect, which are understood as soon as they are heard. Whence, the propositions which are made from them are not only self-evident in themselves, but are also in respect to us, as, "Every thing is said to be or not to be," whence such are not called suppositions. But there are other propositions in which, although the predicate may be [drawn] from the definition of the subject, nevertheless, this definition of the subject is not known to all, and consequently, it is not known to all that the predicate may be [drawn] from its definition, as this, "All right angles are equal," for equal is [drawn] from the definition of right angle. For a right angle is that which is caused by a straight line falling perpendicularly upon a straight line so that equal angles are made on both sides. Therefore, since all do not know this, namely, that equal is [drawn] from the definition of right angle, therefore this is assumed, and for this reason it is called a supposition. The proposition of a demonstration can be called a supposition in another way. For there are some propositions which are proved by means of the principles of a superior science, as will be shown below,[4] and therefore, in the inferior science they must be supposed. And since demonstration proceeds from these principles or proper premisses, since they actually enter it, therefore it proceeds from proper premisses, and not from common ones.

Therefore, it is evident how demonstration proceeds from proper premisses, and so forth.[5]

CHAPTER VII

THAT DEMONSTRATION PROCEEDS FROM SELF-EVIDENT PRINCIPLES

Next it is said that demonstration proceeds from self-evident principles.[1] Propositions are called "self-evident" in which the predicate is drawn from the definition of the subject, or is immediately caused by its principles. But those things from which demonstration proceeds are of this kind. For in the major proposition a proper passion is predicated of the definition of the subject and of its own definition, which is its immediate cause, or which expresses its immediate principles, while in the minor proposition the definition is predicated of the subject. Therefore, demonstration proceeds from self-evident principles.

It should be known that certain propositions are self-evident in themselves, but not in respect to us, as this, "Whoever has a fever has an excited pulse," for although this is self-evident in itself, since fever is the cause of the excitation of the pulse, nevertheless, it is not self-evident in respect to us, but conversely, we know a fever through an excitation of the pulse. Now demonstration does not proceed from such self-evident propositions. For if the reason of a thing is more known than the thing itself, and the conclusions are known to us by reason of the premisses, therefore the premisses should be better known to us. Whence, in no way can the conclusions be made known to us unless the premisses be better known to us. Now demonstrations are made so that the conclusions may be made known to us. Therefore, demonstrations proceed from what is better known to us. Now certain propositions are self-evident, both in themselves and in respect to us, as, "Every number which does not have a mean in itself is even," because every number which does not have a mean in itself is called even, and conversely, and demonstration proceeds from such principles. Therefore, it is clear that demonstration proceeds from principles [which are] self-evident and better known to us.

From what has been said, it can be concluded that demonstration and knowledge, which is the habit of the demonstrated conclusion, are always made from the incorruptible and the eternal.[2] For where the *Dictum de omni* is saved, it must be that this is incorruptible and eternal. For, as has been said above [109B-331*,332*], the *Dictum de omni* is not said about that which inheres sometimes and does not inhere sometimes, but about that which always inheres. Corruptible things, however, do not exist always. Therefore, the *Dictum de omni* is not saved in them, but only in eternal things. But in the principal demonstration, which has both premisses universal, the *Dictum de omni* is saved in all. Therefore, demonstration is from the incorruptible and the eternal.

ψAlso it is evident that definition is of eternal things. For although corruptible things may be defined, nevertheless, they are not defined insofar as they are corruptible, for only particulars are corruptible and particular things are not defined. Whence, definition is of corruptible things accidentally, but of eternal things essentially.

It should be known that some enduring or eternal things, insofar as they pertain to the end of demonstration, are not always so according to time, but are so through a comparison to a cause, for it never fails that when such a cause is assumed, an effect is assumed; as it never fails that there is an absence of the sun's light when the moon is placed between us and the sun, nevertheless, the absence of the sun is not forever, but only for the present. But some others are not for all time either through a comparison to time or through a comparison to a cause which can be impeded. For a man with two eyes is not always generated from the seed of man, but sometimes something is lacking because of an impediment of the agent cause or of the material cause. And in both cases the demonstrations are ordered such that they may be from the eternal as a universal conclusion is inferred from universal propositions by removing that in which there can be any defect, either on the part of time or on the part of the cause. Therefore, it is evident that demonstration is from the eternal in the premisses as well as in the conclusion. Therefore, knowledge, which is the habit of the demonstrated conclusion, is from the eternal.[43]

CHAPTER VIII

THAT DEMONSTRATION PROCEEDS FROM THE CAUSES OF THE CONCLUSION

Next it is said that demonstration proceeds from the causes of the conclusion, which can be understood in two ways.[1] In one way, that the premisses may be the reason that the major extreme inheres in the minor, and this is true not only in demonstration, but also in every syllogism in which something true is concluded from true premisses. Whence, in this syllogism, namely: "Every man is running, Socrates is a man, therefore Socrates is running," given that this is true, namely, "Every man is running," and "Socrates is a man," it follows necessarily, as an effect, "Socrates is running."

And that the premisses may be the cause of the conclusion can be understood in another way, since the cause both of the subject and of the predicate of the conclusion itself is contained in them, and this applies to demonstration only. It should be known that since, as has been said [109A-329*], to know the *propter quid* of a thing is to know the cause of the thing, and the middle term which is drawn from the demonstration, which is a syllogism producing knowledge, is the definition of the subject and of the passion. Now every good definition is given through some cause, therefore, the middle term which stands in the premisses is the cause of the subject and of the passion, nevertheless, in one way of the subject, and in another way of the passion.[2] It should be known here that, since there are four causes, namely, the material, the formal, the efficient and the final, a definition can be taken from each of these. For example, by saying, "A house is a shelter [made] of stone, cement and wood," the definition is through the material cause. But if it were said, "A house is a square shelter with length and height," the definition would be through the formal cause. But if it were said, "A house is a shelter constructed by an artisan with hammer, tiles and plumb line," the definition would be through the efficient cause. But if it were said, "A house is a shelter protecting us from rain, cold and heat;" the definition would be through the final cause. Therefore, since the subject can be so defined through causes, the middle term, which is its definition, as has been said [111A-342*], will be related to it in the relationship of just so many causes. But in respect to the passion, the middle term is related in the relationship of two causes, namely, the material and the efficient. For the subject, as has been said [110B-337*], is compared to its proper passion, both as the subject and as the efficient cause, and in the same way the definition of the subject is related in respect to the passion.

It should be known that since causes have an order among themselves, the reason of one is taken from another. For the reason of the material cause is taken from the form, for the matter must be such as the form requires. Now the efficient cause is the reason of the form, for since every agent produces something like itself, the mode of the form which follows from the action must be according to the mode of the agent. But the reason of the efficient cause is taken from the end, since every agent acts for an end, therefore, the definition which is taken from the end must be the reason and probative cause of the other definitions which are taken from the other causes; and that which is taken from the agent, of the other two; and that which is taken from the form, of that which is taken from the matter. Therefore, the definition which is taken from the matter can be demonstrated through the final cause, and so also for the others.

And for this reason, the Philosopher says in Book I [sic] of the Posterior Analytics[3] that the definition is either the conclusion of a demonstration, namely, when it is through such a cause which can be concluded from a definition which may be made through another cause; or it is a principle of the demonstration, namely, when it is, conversely, from the cause which is the reason and probative cause of another; or it is a demonstration, differing only in position or order, namely, when it comprehends two such causes.

And thus it is evident about the parts of the definition of demonstration which its matter contain.

CHAPTER IX

THAT THE PRINCIPAL AFFIRMATIVE DEMONSTRATION IS ONLY IN THE FIRST FIGURE, AND IN ITS FIRST MOOD

Now it remains to speak about its form, for in its definition it is said that it is a syllogism. Note here that demonstration is sometimes affirmative, sometimes negative. Now of affirmative as well as negative demonstrations, some are principal [potissima], while some are not principal. Those are called "principal" in which all those things which have been said about demonstration are observed, with no omission, but if something were omitted, it would not be principal. Whence it must be seen in which figures the principal demonstrations may be made, and first the affirmative ones.[1]

It should be known that the principal affirmative demonstration ought to be made only in the first figure and in its first mood, which can be made evident thus: for the demonstration propter quid ought to be made in that figure and in that mood of it where the middle term is the cause of the passion and of the subject, so that the premisses are essential, in which the middle term can be conveniently assigned as the cause of the passion and of the subject. But this cannot be done except in the first figure. For an affirmative proposition is not concluded in the second figure, but in the third figure, although an affirmative can be concluded, nevertheless, since the middle term is the subject in both propositions, in the minor proposition in which the subject may be predicated of its own definition, this could not be predication in any way of speaking essentially, which does not happen in the first figure, in which the definition is predicated of the subject in the minor proposition, as has been said [110B-337*]. Therefore, the principal affirmative demonstration is made only in the first figure.

Also it must be made in its first mood, for, as has been said above, the _Dictum de omni_ is preserved both in the premisses and in the conclusion in a principal demonstration. And first, because it cannot be made unless all the premisses be universal, but this happens only in the first mood of the first figure. Therefore, the principal demonstration can be made only in it. But demonstrations which are not principal can be made both in the third mood of the first figure and in moods concluding to an affirmative in the third figure. Therefore, it is evident in what figure and in what mood a principal affirmative demonstration can be made.[2]

CHAPTER X

THAT THE PRINCIPAL NEGATIVE DEMONSTRATION MUST BE MADE IN THE SECOND MOOD OF THE SECOND FIGURE

And in order to known how the principal negative demonstration must be made, let us see whether there can be such a demonstration. I say that although, in a negative demonstration there can neither be nor be preserved all that was said above about demonstration (for something cannot be predicated essentially in a negative proposition, since to be predicated essentially is [predicated] of an affirmative [proposition]), nevertheless, it suffices in such a demonstration that the premisses be necessary and immediate. And how both the affirmative as well as the negative premisses may be necessary has been said in the treatment of syllogisms,[1] and how the affirmative proposition may be immediate has been said above [110B,111A-340*,341*]. Therefore, it remains to say how the negative premiss may be immediate or mediate.

It should be noted that when something is denied of another thing, and conversely, and something can be predicated universally about either term about which the other term can be denied, then a universal negative proposition formed from the first two terms can be demonstrated by means of that which is predicated universally [and] affirmatively of either of those terms. For example, "man" can be denied of "stone" and conversely, as, "No man is a stone," and since something can be predicated about man universally, namely, "animal," for we say, "Every man is an animal," and "stone" can be denied of "animal," therefore, this proposition, namely, "No man is a stone," is mediate. For it can be proved through the middle term thus: "No animal is a stone, every man is an animal, therefore no man is a stone." And the same follows if something can be predicated universally of "stone" which can be denied of "man" or of which "man" can be denied. Therefore there will be an immediate negative proposition when two terms denied of each other will be so related that neither of them will have anything which can be predicated of it universally and which can be denied by the other term, or that term by it. For example, "No substance is a quantity." This is immediate, for no term can be predicated universally of substance which may be denied of quantity, for "being" is predicated universally of "substance," which nevertheless, is not denied of "quantity." Likewise, also, two definitions of two species contained immediately under some genus make an immediate negative proposition, as is this, "No rational mortal animal is an irrational mortal animal," for "rational mortal animal" is the definition of man, while "irrational mortal animal" is the definition of brute, but brute and man are immediately under animal.

And it will be the same for two differences oppositely dividing the same genus, as, "No rational thing is irrational." However, it is otherwise for the species constituted through these differences, as, "No man is a brute," since there is something above man which can be denied of brute, namely, rational, and there is something above brute which can be denied of man, namely, irrational. Therefore, they are mediate, although it cannot be said properly that rational is above man, nor irrational above brute, and therefore, they are not properly mediate.

ψThese things having been established, it can be known immediately how a negative demonstration may be made and in what figure. For, since a universal negative proposition is not concluded in the third figure, such a principal demonstration cannot be made in it. Whence, since in the first and second figures a universal negative proposition can be concluded, such a demonstration concluding to it can be made in either figure. But the principal demonstration can only be made in the second mood of the second figure. The reason is that, although knowledge is only about the true, nevertheless, it is not about all the true, but whatever is syllogized from immediate principles. Whence, in stating this: "Every habit is a quality, every virtue is a habit, therefore every virtue is a quality," although such a conclusion is true, and from premisses which are true, immediate, necessary and essential, still knowledge will not be caused by it essentially. But knowledge is caused only in affirmative demonstrations from true conclusions whose premisses are true, immediate and the like, as has been said [110B-337*,338*], in whose conclusions the proper passion is predicated of its proper subject. So also, in negative demonstration knowledge will not be caused from its relation to its conclusion, given that the conclusion be true and is concluded from immediate premisses, unless the proper passion be truly denied of that which is not subject to it, or from that which does not express its cause, as the definition expresses it of the proper subject; and such truly will be a principal demonstration.

Now this could not be made from immediate propositions, except in the second mood of the second figure thus: "Every risible thing is a rational animal emitting breath by opening the mouth upon the apprehension of a suitable thing, but no irrational thing is such a rational animal capable of apprehension, therefore no irrational thing is risible." It is certain that the major is immediate, for in it the definition of the passion and of the subject is predicated of the passion itself. The minor is also immediate, as has been said 114A-361*]. But in the conclusion the passion is removed from that which is not subject to it, and this cannot be done in the first figure, and not in the first mood of the second figure. For if it would be stated in the first figure thus:

"No irrational thing is risible, every brute is irrational, therefore no brute is risible," then the major is not immediate. And if the syllogism were made in the first mood of the second figure, although the premisses could be immediate, nevertheless, it would not be concluded by removing the passion from the subject, but conversely, thus: "No irrational thing is a rational animal, but every risible thing is a rational animal, therefore no risible thing is irrational."[ψ2]

A particular negative demonstration can also be made in the fourth mood of the second figure. And thus it is evident about the form of demonstration, in which figures and moods it must be made. Therefore, it is evident about demonstration propter quid.

CHAPTER XI

THAT DEMONSTRATION *QUIA* PROCEEDS FROM EFFECT TO CAUSE OR FROM REMOTE CAUSES TO EFFECT

Now we must speak about demonstration *quia*. First, we must see here what is signified by what is called *propter quid* and by what is called *quia*. It should be noted that we can know four things about a thing, namely, what it is [*quid est*], whether it is [*an est*], why it is [*quia est*], and on account of what it is [*propter quid est*].[1]

To understand these, it should be known that since there is no knowledge, unless of true things, and truth and being are converted, therefore, knowledge will be about being.[2] Now as has been said in the treatise "On the Categories" [63A-52*], being [*esse*] is found in things in two ways, namely, the being of essence and the being of actual existence. And since the being of an essence is called quiddity, or what the thing is, therefore, when we know the being of the essence of any thing, we are said to know what the thing is. Now the being of actual existence is [disposed] in one way in a substance and in another way in an accident. For since the being of an accident is to inhere, to know the being of the actual existence of a subject is only to know that it is in act, and this is to know of it whether it exists; but to know of an accident the being of its actual existence is to know of it why it is. Whence, to know why it is, is nothing other than to know that this inheres in that. And since sometimes something inheres in another on account of some cause, therefore to know that cause is to know the *propter quid*. Therefore, it is evident that to know why something is, is to know that it inheres in something without knowing the reason why it inheres. And to know the *propter quid* is to know that something inheres in something and to know the reason why it inheres in it. Therefore, a demonstration *propter quid* is that in which the reason why the predicate inheres in the subject in the conclusion is shown. But that demonstration is called *quia* in which it is concluded that something inheres in some subject, nevertheless, no reason why it inheres in it is assigned.

Now, as has been said above [113A-353*], ψfor a *propter quid* demonstration it is required that it proceed from causes and from immediate principles, for it does not suffice to know a cause, but why it is the cause of that which is known, if it will be the immediate cause. Therefore, demonstration *quia*[3] will be either that which does not proceed from causes or which does not proceed from immediate principles, but which does proceed from remote causes. As for the first, it should be known that, as has been said [113A-353*], demonstration is called the cause of knowing, namely, as the conclusion is made known to us through the premisses and this cannot be done unless the premisses are better known to us. And therefore, this is necessary, namely, that demonstration proceed from that which is better known to us.[4] Now it sometimes happens that an immediate effect may be better known to us than a cause. Therefore, in such cases demonstration ought to proceed from the effect to the cause. For example, moving and feeling are the immediate effects of having a sentient soul, and it is better known to us that something moves and feels, since we sense this, than that it should have a sentient soul. And therefore, one should proceed thus: "Everything which moves and feels has a sentient soul, but every animal moves and feels, therefore every animal has a sentient soul." Now it is concluded about the animal that it has a sentient soul, nevertheless, not through a cause, but through an effect, which is moving and feeling. But if a demonstration and a conclusion were made thus: "Everything having a sentient soul moves and feels, but every animal has a sentient soul, therefore every animal moves and feels," it would be a demonstration *propter quid*.

It should be known that such demonstrations *quia* are sometimes in those terms which are convertible among themselves, namely, the middle term, the major extreme and the minor extreme, as in the aforesaid terms. For every animal moves and feels and has a sentient soul; and everything which moves and feels and has a sentient soul is an animal; and everything which has a sentient soul is an animal and moves and feels; and universal demonstrations are made in such terms. Now sometimes it happens that the middle term, namely, the effect, for example, moving and feeling, is found in more than the minor extreme, and yet a syllogism or a suitable demonstration is made thus: "Everything which moves and feels has a sentient soul, but every man moves and feels, therefore every man has a sentient soul." For "man" is found in less than "moving and feeling." But if the middle term is found in less than the minor extreme, there is no demonstration, thus: "Everything which moves and feels has a sentient soul, every body moves and feels," and this is false. On the contrary, however, if the middle term is found in less than the major extreme, a demonstration is made thus: "Everything which moves and feels is a body, every animal moves and feels, therefore every animal is a body." But if the middle term is found in more than the major extreme, a demonstration is not made. For from an effect which is in several causes, one cause cannot be concluded, thus: from "a moving and feeling" "rational" cannot be concluded. Therefore, it is evident about demonstration quia which proceeds from an effect to conclude to a cause.

Now demonstration quia proceeds from remote causes in the same science and in diverse ones. In the same science, as the demonstration of Anacharsis, which was this: "Wherever there are no vines, there are no whistlers or singers, but among the Scythians there are no vines, therefore among the Scythians there are no whistlers or singers." Although it is certain that vines may be a cause of singing, nevertheless, they are a very remote cause. Vines are the cause of grapes and grapes are the cause of wine and wine is the cause of joy and joy is the cause of singing. It is certain that such a demonstration is _quia_. For by demonstrating thus, we cannot know the immediate cause of why the Scythians do not sing, but only through many other intermediate demonstrations having been made, and thus through it, not the _propter quid_, but the _quia_ is known, and so forth.[45]

CHAPTER XII

THAT IN DEMONSTRATION SOME THINGS ARE KNOWN PRIOR TO THE CONCLUSION AND SOME ARE KNOWN AFTER IT HAS BEEN DEMONSTRATED

Now to know how a demonstration quia may be made in the other sciences, it should be known that in any demonstration, in whatever science it may be made, we know something before the conclusion is demonstrated and we know something about it after it is demonstrated. For, as has been said [110B-337*], there are three terms in a demonstration, namely, the subject, the passion and the definition of both which is the middle term, and there are in it first or noble principles. Whence, before we demonstrate we know that these noble principles are true, for complex things cannot be defined, and since these noble principles are complex, therefore they cannot be defined. Therefore, we do not know about them what they are [quid sunt], and consequently, we do not know about them before a demonstration what they are. But we do before a demonstration about them why they are [quia sunt], for they ought to be believed to be true, for they are known by the natural light of reason so that, the terms being understood, we understand that they are true, as has been said [112A-347*,348*]. Nor do we know of them the propter quid, since they are the first conceptions of the mind. Now we know beforehand about the passion what it is, since it has a definition which we must know before the demonstration is made. For, unless the demonstrator knows the middle term beforehand, he would never syllogize. Now the middle term in a demonstration is the definition of the subject and of the passion. And of the passion, we cannot know beforehand why it is, namely, the being of its actual existence. For since the being of an accident is to inhere, to know beforehand that it inheres is to know the being of its actual existence, and thus before we demonstrate it, we would know its demonstration. Now the demonstration shows nothing other than that the passion belongs to the subject, as has been said [110B-338*]. Now this is false, therefore, we do not know beforehand of it why it is. Now of the subject, we know beforehand, what it is, because it is already necessary to know the middle term beforehand, as has been said. But its definition together with the definition of the passion is the middle term. We also know beforehand of it why it is, for nothing can be known about a thing that is not actually existing, and I speak of actually existing both in itself and in its causes. For, although a rose may not actually exist now, nevertheless, since it exists in its cause, we can demonstrate some passion of it. Therefore, it is evident what we know beforehand in demonstration, and what we know of the same after it is made.

And in order to see this, note that there are premisses and there is a conclusion in a demonstration. Now the premisses are either the primary or the secondary principles in a science. For example, in the science of animals, the first principle is "Every sentient animate body moves and feels." Beyond this no principle is found prior and more universal in the same science except the noble principles, which, as has been said [111B-346*], do not actually enter into the demonstration, whence they are not contained in the same science, but in common knowledge. Now the secondary principles are those which are demonstrated by means of the primary principles and they are the primary conclusions, and afterwards they are taken in the same science as principles for demonstrating other things. For example, I make the first demonstration thus: "Every sentient animate body moves and feels, every animal is such a body, therefore every animal moves and feels." Afterwards I accept this conclusion and I make it a premiss thus: "Every animal moves and feels, every man is an animal, therefore every man moves and feels." This is called a secondary principle. Now about the first principles in a science, it is known only that they are. For if their propter quid is known, they would have to be demonstrated, which could not be done except through something prior, and therefore, they would not have been first principles. But it has been posited that they were first principles. Therefore, their *propter quid* cannot be known in that science they are. And for this reason it is commonly said that no science proves its own principles, but if they must be proved, they are proved through a superior science, as natural science proves the principles of the science of animals. For natural science is about every movable body. Or at least they can be proved through mathematics or through dialectics, which are the sciences common to all things and which prove the principles of all sciences, but in mathematics demonstratively while in dialectics probably or opinionatively. But the *propter quid* is known about the secondary principles in a science, for they are proved elsewhere, as has been said [116A-372*]. Therefore, it is evident what we know about the principles in a demonstration.

And we know the *propter quid* of a conclusion in a demonstration *propter quid*, while in a demonstration *quia* we do not know the *propter quid* either since the middle term is not the cause of the conclusion, but its effect, as has been said [115A=366*], or since it is a remote cause.

It should be noted that there can be two sciences about the same subject,[1] one formally and the other naturally, as geometry is about the line formally, while perspective is about the line, not insofar as it is a line, but insofar as it is visible. Whence, whoever would demonstrate something about the visible line through the principles of the line insofar as it is line, as a geometrician he would know the propter quid of that conclusion, while as a student of perspective he would know it only quia. For example, let this demonstration be made: "Every length without width in which the middle does not vary from the extremes is straight, but a line passing through a square tablet is this kind of a length, therefore the line of a square tablet is straight." The geometrician knows the propter quid about this conclusion, since he knows the cause of the straightness of the lines. But the student of perspective assumes it since he does not know the cause, and therefore, he knows the quia, but not the propter quid, of the aforesaid conclusion, and so on for the others. And thus the inferior science is called subaltern, namely, since it is material, while the superior science is called subalternant, since it is formal.

It should be known that sometimes it happens that a subaltern science is subalternant in respect to another science, as perspective is subaltern in respect to geometry, while in respect to the science of optics it is subalternant. For since the science of optics is part of natural science, it assumes the principles of perspective for proving some conclusion, and thus it knows only the quia about that conclusion, while perspective [knows] the propter quid.

It should be known that some sciences do not have a subject materially taken under a formal one, and nevertheless, in some conclusion the principles of another science are accepted, and they know the *quia* but not the *propter quid* about that conclusion. For example, that circulatory injuries heal more slowly is a conclusion in medicine, whose subject is not under the subject of geometry, and nevertheless, this conclusion is proved by means of the principles of geometry, which are that the parts of a circle because they lack angles are less close to each other. And from this it follows that such wounds heal more slowly.

Therefore, it is evident about demonstrations *propter quid* and *quia*, and so forth.[2]

CHAPTER XIII

THAT THE KNOWLEDGE WHICH IS THROUGH CAUSES AND WHICH EXPRESSES THE FORM IS MORE CERTAIN THAN THAT WHICH EXPRESSES THE EFFECT AND WHICH EXPRESSES THE MATTER

Having spoken about demonstrations, some things must be said about the sciences which are their effects. Two things must be seen about this. First, what is required for a science to be certain; second, what is required for a science to be one. As to the first, it should be known that that science is called more certain simply which proceeds from what is better known simply and what is better known to us. And something can be better known than another simply in two ways. In one way the cause is better known simply than the effect. In another way the form is better known simply than the matter. For the principle of knowing matter is from the form. Therefore, those sciences which express the cause and the propter quid, as has been said about the subalternant sciences [116A-373*], are more certain than those which express the matter. Whence, geometry, which is about the line as to its formal principles, is more certain than perspective, which is about the visible line, or the science of the triangle [is more certain] than that of brass triangles. And since, as it is said in Book VII of the *Metaphysics*,[1] there are two kinds of matter, namely, sensible matter or natural matter and intelligible matter, as continuity, therefore, the science which abstracts from both matters is more certain than that which abstracts from only one. For geometry abstracts from sensible matter and although it treats of body, as also does natural science, nevertheless, it is more certain than natural science, which does not abstract from sensible matter. Now arithmetic which abstracts from sensible matter and from continuity which is, as has been said, intelligible matter, is, therefore, more certain than geometry. For sciences are more certain in three ways. First, those which express the cause and the *propter quid* are more certain than those which express the effect and the *quia*. Second, those which express the form are more certain than those which are concerned with sensible matter. Third, those which express the form such that they are not also concerned with intelligible matter are more certain than those which are concerned with such matter. Therefore, it is evident about the certitude of the sciences, and so forth.

CHAPTER XIV

THAT THE FORMAL UNITY OF A SCIENCE IS TAKEN FROM THE FORMAL UNITY OF THE SUBJECT ACCORDING TO THE NATURE OF THE KNOWABLE

As to the second question, namely, as to the unity of a science [*scientia*], it should be known that there are two things to consider in a science, namely, the subject itself about which the passion is and those principles themselves from which the demonstration is made for concluding the passion of the subject. Now to the end that the subject be knowable to us, it must have parts prior to itself. Note here that the process of knowledge [*scientia*] is, as it were, a certain movement of the reason. Now in the movement there are two things to consider, namely, the starting point [*principium*] and the end [*terminus*]. But the end at which knowledge is terminated is the subject about which the science is, since, in speculative sciences, nothing other is sought except the understanding of the subject. Thus in geometry nothing other is sought except the understanding of magnitude. But in the practical sciences nothing other is sought except the construction of the subject itself, as in the science of building, the construction of a house is intended. Therefore, the subject is the term of such a movement. Now the starting point of such a movement is from the first principles of the subject, which are its proper parts, as the beginning of the process of natural science is from the matter and from the form. Whence, if there is a thing which does not have such prior principles from which the reason can proceed, then there is no science about it, as science is taken here, as it is the effect of demonstration. Whence, there can be no science taken in this way about separated substance, since we cannot know their quiddity through the demonstrative sciences. For, although the separated substances are intelligible in themselves to the intellect proportioned to them, nevertheless, the characteristics of them by which their essence is known is not gathered through some of their properties, but it can be correctly known through the speculative sciences about them whether they are and what they are not, from likenesses found in inferior things, and then for understanding them we use prior and posterior things which, although they may be posterior in regard to nature, nevertheless are prior in regard to us. Therefore, the subject of a science, as science is taken here, must have prior parts from which the process to its knowledge may be made, and this should be understood for the integral parts of the subject, as letters and syllables are parts of a word, which is the subject of grammar. It should be known that although it has been said that the term at which the process of a science is terminated is the subject [117-377*, 378*], nevertheless, it must not be understood that it is the ultimate term. Now the ultimate term at which the consideration of a science is terminated is that the passion of the subject be shown.

These things having been established, it should be known that that science is one which is of one genus of the subject formally taken, of which there are parts and passions, and which has the same first principles, not simply but in the science, while diverse sciences are those which have diverse principles. And that the unity of the science ought to be taken from the unity of the subject can be evident from what has been said. For the unity of a movement is taken from its term. Now the subject is the term of the movement of reason in the process of knowledge, as has just been said. Now such a subject ought to be one formally insofar as it is of this kind. Note here in regard to this, that the subject is related to the science as an object ot a potency. Now the material diversity of an object does not diversify the potency, but the formal diversity does. Thus, the material diversity of the knowable objects does not diversify a science, but the formal [diversity does]. Now the formal reason of the knowable object is taken as is the formal reason of the visible. Now the formal reason of the visible is taken from light through which all things are seen. Also the formal reason of the knowable object is taken according to the principles from which something is known. Whence, however diverse the knowable objects may be in their nature, so long as they are known through the same principles, nevertheless, they pertain to the same science, since they are not diverse insofar as they are knowable. For they are knowable through their own principles. Just as it is evident that human voices differ greatly according to their matter from the sounds of inanimate bodies, nevertheless, since the harmonies in them are heard according to the same principles, therefore, the music, which comes from each of them, is the same. And, on the other hand, if they are the same knowable things according to their nature, and, nevertheless, are considered through diverse principles, then they pertain to diverse sciences, as the mathematical body is not separated in subject from the natural body, nevertheless, the mathematical body is known through the principles of quantity, while the natural body through the principles of movement, on that account the science is not the same, namely, the mathematical science and the natural science. Therefore, the unity and the diversity of sciences is from the formal unity and the formal diversity of the subject, which formality is taken from the reason of the knowable object, that is, according to the identity and diversity of the principles. And for this reason it is the same to say, "They have the same formal subject" and "They have the same principles," and they differ according to principles because they have different subjects formally.

Now it should be known that the principles about which we are speaking are the principles which are first in the science, and according to the community of these principles, the sciences have more or less in common. And the first principles are known in the genus of the knowable object according to the definition of the subject, as has been said [117B-380*]. And so it is evident about the unity of the sciences.

Thanks be to God, the Author of all good.

NOTES

FOREWARD

1. I have translated the vulgate text of the *Summa totius logicae Aristotelis* as found in Sancti Thomae Aquinatis, *Opera omnia secundum impressionem Petri Fiaccadori Parmae 1852-1873 photolithographice reimpressa*, ed. Vernon J. Bourke (New York, 1950), Vol. XVII, pp. 54-117.

2. Aristotle, *Metaphysics*, Alpha, i, 980^{a}.

3. Cf. *supra*, Vol. I, pp. 56-57.

4. The internal references cite the page and column of the Parma edition followed by the page of this translation.

5. I have translated "praedicamentum" by "category," even though this translation fails to render into English the connection between "praedicabile" and "praedicamentum."

6. I have renumbered the treatises of the *Summa* to conform to the intention of the author and to the manuscript tradition. cf. *supra*, Vol. I, chap. iii. The variations of the Parma edition are indicated in brackets in the Table of Contents.

7. This reference is to the *Topics* and the *Sophistical Refutations* of Aristotle.

TREATISE I

CHAPTER I

1. Porphyry, *Isagoge*.

2. I have translated "materia signata" by "signate matter," rather than by "quantified individual."

CHAPTER II

1. This has not been said before, but is implied at the place cited.

2. Tr. I, chap. iii.

3. This and the preceding internal reference are imprecise.

4. The author seems to be confused at this point. He apparently had no clear idea of supposition.

CHAPTER III

1. This has not been said before, but is hinted in the cited passages.

2. Cf. supra, Vol. I, pp. 37-40; pp. 43-44.

3. I have translated "perfectio" and related words by "completeness" and "perfection," according to the context.

CHAPTER IV

1. Here again there seems to be a confusion of supposition.

2. The quotation marks here are from the Parma edition. I have refrained from using them in many cases to preserve the ambiguity of the text.

3. This reference is not exact.

CHAPTER V

1. Meta., Beta, iii, 998^b.

2. The text is defective here.

CHAPTER VI

1. Tr. V, chap. ii.

2. Tr. V, chap. iv.

CHAPTER VII

1. Meta., Eta, iii, 1043^b-1044^a. This reference is not exact.

2. Tr. V, chap. ii.

CHAPTER VIII

1. Meta., Delta, xxx, 1025^a

2. Tr. II, chap. iv.

3. Tr. I, chap. iii.

TREATISE II

CHAPTER I

1. Cf. Aristotle, *Categories*, i, 1^a1-17.

2. I have used "denominatively" rather than "derivatively" to express the multitude of meanings conveyed by the original.

3. I have translated "ratio" by "nature" here rather than by "concept" to preserve the ambiguity of the text.

4. I have translated "animatus" by "living" and by "animate body," according to the context.

5. The parallel with *Cat.*, chap. i, ends here.

6. The parallel with *Cat.*, chap. i, resumes here.

7. The parallel with *Cat.*, chap. i, ends here.

8. I have amended the text to read "universaliter."

9. *Meta.*, Delta, vii-viii, 1017^a-1018^b.

CHAPTER V

1. Cf. *Cat.*, v, 1^b-4^b. I have translated "ens per se" by "essential being," "being in itself" and "being by itself," according to the context. cf. *Meta.*, 1017^a-1017^b.

2. The example is not in Bk. i of Aristotle's *Physics*.

3. This is possibly a reference to *Physics*, i, chap. i, 184^a.

4. *Cat.*, v, 2^b.

CHAPTER III

1. *Cat.*, v, 2^b.

2. Parma apparently omits "per se."

3. I have translated "subjecio" by "place under" and "be the subject," according to the context.

4. Tr. II, chap. iv.

CHAPTER IV

1. *Cat.*, v, 4^a20.

CHAPTER V

1. Treatise III of the Parma edition begins here.
2. Hardly more than the chapter titles are taken from Aristotle.
3. *Cat.*, vi, 4^b20.
4. Tr. II, chap. iii.
5. Cat., vi, 4^b.

CHAPTER VI

1. *Cat.*, vi, 4^b32.
2. Tr. II, chap. xvi.
3. Tr. II, chap. xi.
4. *Cat.*, vi, 4^b32-33.

CHAPTER VII

1. *Cat.*, vi, 4^b-5^a.
2. Parma reads "decisione" for "divisione."
3. *Cat.*, vi, 5^a9-11.

CHAPTER VIII

1. Tr. II, chap. xxxvi.

CHAPTER XII

1. Cf. *Cat.*, vi, 5^b-6^a.
2. Tr. II, chap. iv.
3. *Cat.*, vi, 6^a27.
4. *Cat.*, vi, 6^a27.
5. Cf. Tr. II, chaps. xx and xxiii.

CHAPTER XIII

1. Treatise IV of the Parma edition begins here. Cf. *Meta.*, xiv, 1020^{a}-1020^{b}.

2. *Cat.*, viii, $8^{b}25$.

CHAPTER XIV

1. *Meta.*, Delta, xix, xx and xxiii.

2. *Cat.*, viii, $9^{a}8$.

3. *Meta.*, Delta, xx, 1022^{b}.

CHAPTER XV

1. *Meta.*, Delta, 1017^{a}.

2. *Cat.*, viii, $9^{a}15$-21.

CHAPTER XVI

1. *Cat.*, viii, $9^{a}28$-9^{b}.

2. Aristotle, *Ethics*, ii, chap. v, 1105^{b}.

CHAPTER XVII

1. *Cat.*, viii, $10^{a}11$.

CHAPTER XVIII

1. *Cat.*, viii, 10^{a}-10^{b}.

CHAPTER XIX

1. *Cat.*, viii, $10^{b}26$-$11^{a}24$.

CHAPTER XX

1. Treatise V of the Parma edition begins here. Cf. *Meta.*, Delta, xv, 1020^{b}-1021^{b}.

2. *Cat.*, vii, 6^{a}-8^{b}.

CHAPTER XXIV

1. *Cat.*, vii, $6^{b}32$.

CHAPTER XXV

1. At this point the numbering of the Parma edition becomes confused. This chapter, while still in Treatise V, is numbered "unicum." The chapters which follow are about the last six categories and, while still in Treatise V, are numbered consecutively for each category.

CHAPTER XXVI

1. *Physics*, iii, chap. iii, 202^a.

CHAPTER XXXI

1. *Meta.*, Delta, xiii, 1020^a.
2. If "sphere"can be identified with "prime movable," then cf. *Physics*, iv, chaps. xii and xiv.

CHAPTER XXXIV

1. Cf. *supra*, Vol. I, pp. 57-58.

CHAPTER XXXVI

1. *Meta.*, Delta, xiii, 1020^a.
2. Parma reads "potentia" for "positio."

CHAPTER XXXVIII

1. *Meta.*, Delta, 1020^a.

CHAPTER XXXIX

1. *Meta.*, Delta, xx, 1022^b; xxiii, 1023^a.
2. *Physics*, iv, chap. iv, 212^a.
3. Aristotle, *De partibus animalium*, iv, chap. x, 687^b.

TREATISE III

CHAPTER I

1. Treatise VI of the Parma edition begins here.
2. Aristotle, *De interpretatione*, i, 16^a, where Aristotle makes the same reference.
3. S. Thomae Aquinatis, *In Aristotelis libros Peri Hermeneias et Posteriorum Analyticorum expositio*, ed. R. M. Spiazzi, O. P. (Turino, 1955), *In Peri Herm.*, prooemium. For the explanation of the Greek letters, cf. *supra*, Vol. I, chap. iv.

4. De int., i, 16^a.

5. I have translated "vox" by "utterance" because it is the only word in English which renders all the meanings of "vox." This use of "utterance" differs from that current in linguistics.

6. De int., ii; In Peri Herm., I, lect. iv.

7. Meta., Epsilon, i, 1025^b1026^a6.

8. Parma, 76B.

9. In Peri Herm., I, lect. v.

10. De int., ii, 16^a; x, 19^b.

11. De int., ii, 16^a-16^b.

CHAPTER II

1. De int., iii, 16^b.

2. In Peri Herm., I, lect. v. All other references to Aquinas in this chapter are from this *lectio*.

3. Parma, 84A.

4. Parma reads "logica" for "lingua." cf. *supra*, Vol. I, pp. 58-59.

5. De int., iii, 16^b17.

CHAPTER III

1. De int., iv, 16^b-17^a.

2. In Peri Herm., I, lect. vii.

3. Meta., Delta, xvi, 1021^b.

4. In Peri Herm., I, lect. vi.

5. In Peri Herm., I, lect. vii. All other references are to this *lectio*.

6. In Peri Herm., I, lect. vii, no. 86, is garbled here.

CHAPTER IV

1. Meta., Gamma, vii, 1011^b28.

CHAPTER V

1. *De anima*, iii, chap. vi, 430.

2. *De anima*, iii, chap. vi, 430.

CHAPTER VI

1. *De int.*, v, 17^{a}.

2. *In Peri Herm.*, I, lect. viii and lect. x. All other references in this chapter are in lect. viii, except where noted.

3. *De int.*, vii, 17^{a}-17^{b}.

4. *In Peri Herm.*, I, lect. x.

5. Parma, 92Bff.

CHAPTER VII

1. *De int.*, vii, 17^{b}.

2. *In Peri Herm.*, I, lect. x. All other references in this chapter are from this *lectio*.

CHAPTER VIII

1. *De int.*, vii, 17^{b}.

2. *Cat.*, x, 11^{b}-13^{b}.

3. Tr. II, chap. xx.

4. *In Peri Herm.*, I, lect. ix.

5. *Cat.*, xi, 14^{a}.

6. *In Peri Herm.*, I, lect. x.

7. *In Peri Herm.*, I, lect. xi.

CHAPTER X

1. *Meta.*, Gamma, vii, 1011^{b}.

CHAPTER XI

1. Tr. IV, chap. iii.

2. Tr. Iv, chap. ii.

3. The author's excessive formalism in regarding any change in word order as reflecting a change in meaning causes this paragraph to be inconsistent with tr. IV, chap. xiii.

CHAPTER XIII

1. The figure is placed at the end of this volume.

2. Cf. A. N. Prior, Formal Logic, p. 187.

CHAPTER XIV

1. Tr. IV, chaps. xvi, xvii and xviii.

TREATISE IV

CHAPTER I

1. Treatise VII of the Parma edition begins here.

2. Cf. Aristotle, Prior Analytics, ii, chaps. xxiii, xiv and xvii; Posterior Analytics, i, chap. i.

3. Cat., iii, 17^a; Post. Anal., i, chap. ii.

4. The Parma edition and the Bochenski edition of the Summulae logicales read "Dici" for "Dictum."

5. Tr. IV, chap. iv.

6. Pr. Anal., i, chaps. v, vi, vii, xv, xvi, xxi, xxiii; Post. Anal., ii, chaps. xii, xiv and xxiv.

CHAPTER II

1. Cf. Pr. Anal., i, chaps. ii, iii, 25^a-25^b.

CHAPTER IV

1. Pr. Anal., i, chaps. iv-vii, 25^b-29^b.

2. Pr. Anal., i, chap. xxv, 41^b-42^a.

3. Post. Anal., i, chaps. i and ii.

4. Physics, i, 184^a.

5. Pr. Anal., i, chaps. iv, v, vi, xxv and xxvi.

6. Post. Anal., i, chap. 2, 71^b-72^b.

CHAPTER V

1. *Pr. Anal.*, i, chaps. iv-vi.
2. The text between the numbers is omitted in the Parma edition.
3. *Pr. Anal.*, i, chap. vii; i, chap. xxiii.

CHAPTER VII

1. *Pr. Anal.*, i, chap. vii; i, chap. xxiii.

CHAPTER VIII

1. This is not in the *Prior Analytics*.
2. Parma reads "minor," which is obviously incorrect.
3. Tr. IV, chaps. vi and vii.

CHAPTER IX

1. *Pr. Anal.*, i, chaps. iv, v, vi, xxiii, xxxii.

CHAPTER X

1. *Pr. Anal.*, ii, chap. xiv.

CHAPTER XI

1. Tr. Iv, chap. x.
2. The text of the Parma edition is confused here.
3. *Pr. Anal.*, ii, chap. xiv, 62^b-63^a.
4. Cf. *Pr. Anal.*, ii, chaps. ii-iv.

CHAPTER XII

1. *Pr. Anal.*, ii, chap. xiv.
2. Parma reads "minor," which is obviously incorrect.
3. Parma reads "minor," which is obviously incorrect.

CHAPTER XIII

1. *Pr. Anal.*, i, chaps. viii-xi.
2. *Post. Anal.*, ii, chap. xi.

CHAPTER XIV

1. Pr. Anal., i, chap. xiii, 32^a-32^b.
2. Pr. Anal., i, chaps. xiii-xxi.

CHAPTER XV

1. Pr. Anal., chap. xvi; cf. also chaps. xix and xxii.
2. Parma reads "majore," which is obviously incorrect.

CHAPTER XVI

1. Pr. Anal., chap. xliv, 50^a-50^b.
2. Topics, ii, chaps. iv, v, vii and viii.
3. Reading "Faciunt enim praedicta nomina consequentiam a positione . . . "

CHAPTER XVII

1. Cf. supra, Vol. I, chap. vii.
2. Cf. supra, Vol. I, p. 175.
3. Cf. supra, Vol. I, p. 176.

CHAPTER XVIII

1. Cf. supra, Vol. I, pp. 177-78.

TREATISE V

CHAPTER I

1. Treatise VIII of the Parma edition begins here. cf. Post. Anal., i, chap. i.
2. Post. Anal., i, chap. ii.
3. Pr. Anal., ii, chap. iv.
4. Post. Anal., i, chaps. ii and vi.
5. Post. Anal., i, chaps. i and ii.
6. In Post. Anal., I, lect. i and lect. iv.

CHAPTER II

1. Post. Anal., i, chap. iv, 73^a; In Post. Anal., I, lect. ix.
2. Post. Anal., i, chap. iv, 73^a-73^b.
3. In Post. Anal., I, lect. x.
4. In Post. Anal., I, lect. xi.

CHAPTER III

1. Post. Anal., i, chap. ii, 72^{a}11.
2. Tr. IV, chaps. iv and v.
3. Pr. Anal., ii, chap. iv, 57^a.
4. This is not in the Prior Analytics. cf. Post. Anal., i, chap. xiii, 78^a-78^b.
5. This is not in tr. IV, chap. xv.
6. Post. Anal., i, chap. vi, 74^b-75^a.
7. In Post. Anal., I, lect. xiii.

CHAPTER IV

1. Post. Anal., i, chap. iv, 73^a-73^b.
2. In Post. Anal., I, lect. xiii.

CHAPTER V

1. Post. Anal., i, chap. vii, 75^b.
2. Post. Anal., i, chap. ix, 76^a.
3. Cf. In Post. Anal., I, lect. v.

CHAPTER VI

1. Tr. V, chap. vii.
2. In Post. Anal., I, lect. xvii.
3. Tr. V, chap. vii.
4. Tr. V, chap. xii.
5. In Post. Anal., I, lect. xvii.

CHAPTER VII

1. *Post. Anal.*, i, chaps. ii, iii and iv.
2. *Post. Anal.*, i, chap. vii, 75^b.
3. *In Post. Anal.*, I, lect. xvi.

CHAPTER VIII

1. *Post. Anal.*, i, chap. vi, 75^a; *Meta.*, Delta, 1013^a-1014^a.
2. *Post. Anal.*, i, chap. vi, 75^a; ii, chap. xi, 94^a.
3. *Post. Anal.*, ii, chap. x. 94^a.

CHAPTER IX

1. *Post. Anal.*, i, chaps. xiv, xxiv-xxvi.
2. *In Post. Anal.*, I, lect. xxvi.

CHAPTER X

1. Tr. IV, chap. xiii.
2. *In Post. Anal.*, I, lect. xxvi.

CHAPTER XI

1. *Post. Anal.*, ii, chap. i, 87^b.
2. *Post. Anal.*, ii, chap. iii, 90^a.
3. *Post. Anal.*, i, chap. xiii, 78^a-78^b.
4. *In Post. Anal.*, I, lect. xxiii.
5. *In Post. Anal.*, I, lect. xxiv.

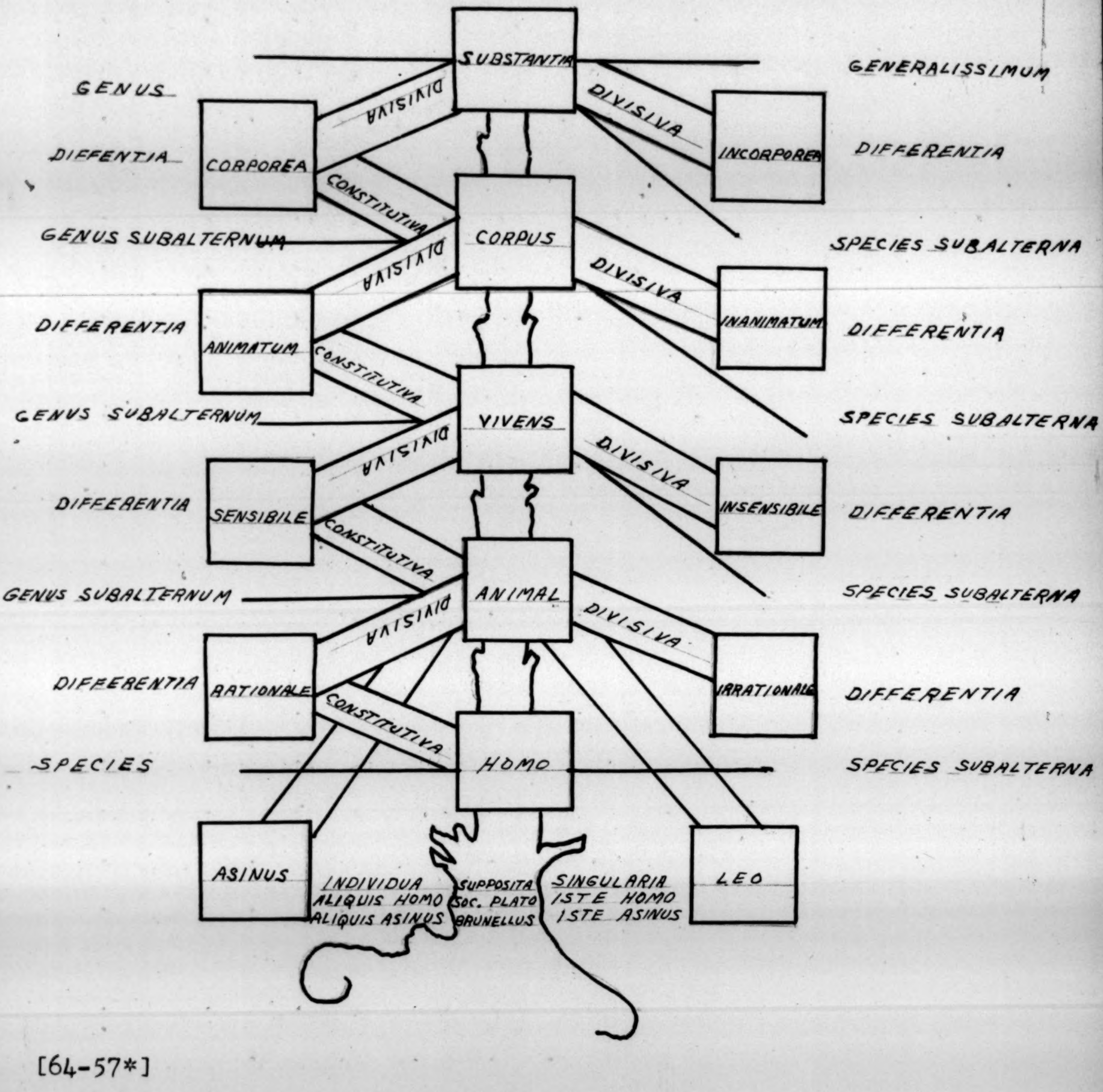
CHAPTER XII

1. *Post. Anal.*, i, chap. xxviii, 87^a.
2. *In Post. Anal.*, I, lect. ii.

CHAPTER XIII

1. *Meta.*, Zeta, x, 1036^a.

TREE OF PORPHYRY


SUBSTANTIA
GENERALISSIMUM
GENUS
DIVISIVA
DIVISIVA
DIFFENTIA
CORPOREA
INCORPOREA
DIFFERENTIA
CONSTITUTIVA
GENUS SUBALTERNUM
CORPUS
SPECIES SUBALTERNA
DIVISIVA
DIVISIVA
DIFFERENTIA
ANIMATUM
INANIMATUM
DIFFERENTIA
CONSTITUTIVA
GENUS SUBALTERNUM
VIVENS
SPECIES SUBALTERNA
DIVISIVA
DIVISIVA
DIFFERENTIA
SENSIBILE
INSENSIBILE
DIFFERENTIA
CONSTITUTIVA
GENUS SUBALTERNUM
ANIMAL
SPECIES SUBALTERNA
DIVISIVA
DIVISIVA
DIFFERENTIA
RATIONALE
IRRATIONALE
DIFFERENTIA
CONSTITUTIVA
SPECIES
HOMO
SPECIES SUBALTERNA
ASINUS
INDIVIDUA
ALIQUIS HOMO
ALIQUIS ASINUS
SUPPOSITA
SOC. PLATO
BRUNELLUS
SINGULARIA
ISTE HOMO
ISTE ASINUS
LEO

[64-57*]

FIGURE 1

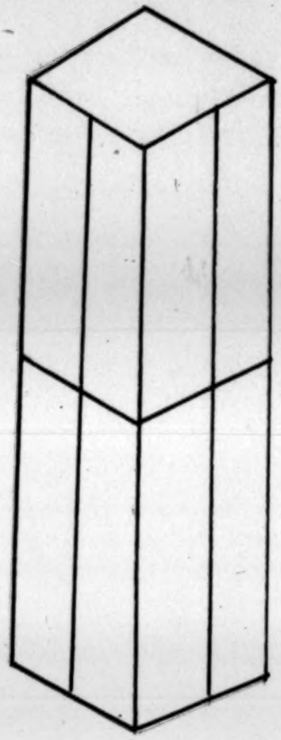


FIGURE 2

[68B-77*]

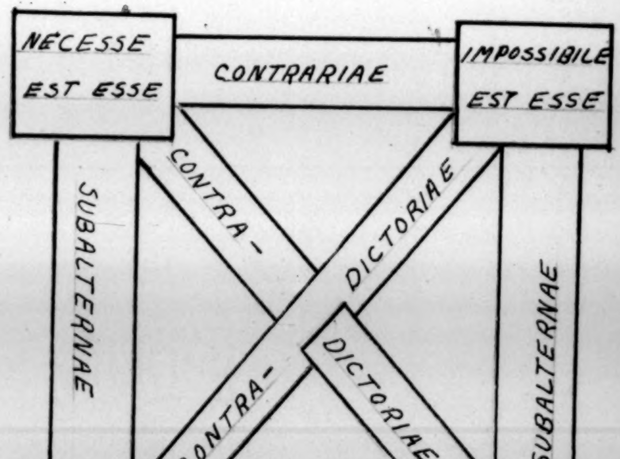

NECESSE EST ESSE
CONTRARIAE
IMPOSSIBILE EST ESSE
SUBALTERNAE
CONTRA-
DICTORIAE
CONTRA-
DICTORIAE
SUBALTERNAE
POSSIBILE EST ESSE
SUBCONTRARIAE
POSSIBILE EST NON ESSE

FIGURE 3

[92A-226*]